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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	04983.0015.US01/38-21 (15089)B
First Named Inventor or Application Identifier	CHEIKH
Title	Nucleic Acid Molecules And Other Molecules Associated With the Sucrose Pathway
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☐ *Fee Transmittal Form (Form PTO-1082)
(Submit an original and a duplicate for fee processing)
2. ☒ Specification [*Total Pages* 312]
(preferred arrangement set forth below)
   - Descriptive title of the Invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R&D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings (if filed)
   - Detailed Description
   - Claims
   - Abstract of the Disclosure
3. ☐ Drawing(s) *(35 USC 113)* [*Total Sheets*]
4. Oath or Declaration [*Total Pages*]
   a. ☐ Newly executed (original or copy)
   b. ☐ Copy from a prior application (37 CFR 1.63(d))
   (for continuation/divisional with Box 17 completed)
   [Note Box 5 below]
   i. ☐ DELETION OF INVENTOR(S)
   Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1 63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference *(useable if Box 4b is checked)*
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Microfiche Computer Program *(Appendix)*
7. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
   a. ☒ Computer Readable Copy
   b. ☒ Paper Copy (identical to computer copy)
   c. ☒ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement *(when there is an assignee)* ☐ Power of Attorney
10. ☐ English Translation Document *(if applicable)*
11. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503) (Two) *(should be specifically itemized)*
14. ☐ *Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired
15. ☐ Certified Copy of Priority Document(s) *(if foreign priority is claimed)*
16. ☐ Other:

*NOTE FOR ITEMS 1 & 14. IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEES, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.27), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.28).

17. **If a CONTINUING APPLICATION,** *check appropriate box and supply the requisite information:*
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: /
Prior Application Information: Examiner: Group/Art Unit:

18. CORRESPONDENCE ADDRESS

☐ *Customer Number or Bar Code Label* *(Insert Customer No or Attach bar code label here)* or ☒ *Correspondence address below*

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Signature	Erik B. Milch	*Date*	*January 26, 1999*

Burden Hour Statement This form is estimated to take 0.2 hours to complete Time will vary depending upon the needs of the individual case Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231 DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231

01/26/99 jc595 U.S. PTO
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HOWREY & SIMON

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January 26, 1999

Box Patent Application

Assistant Commissioner for Patents
Washington, D.C. 20231

Re: U.S. Non-Provisional Utility Patent Application
Application No.: To Be Assigned
Filed: Herewith
For: **Nucleic Acid Molecules and Other Molecules Associated with the Sucrose Pathway**
Inventors: Nordine Cheikh, Dane K. Fisher and Jingdong Liu
Ref. No.: 04983.0015.US01/38-21 (15089)B

Sir:

The following documents are forwarded herewith for appropriate action by the U.S. Patent and Trademark Office:

1. Utility Patent Application Transmittal (PTO/SB/05);

2. U.S. Utility Patent Application entitled:

   Nucleic Acid Molecules and Other Molecules Associated with the Sucrose Pathway

   and naming as inventors:

   Nordine Cheikh, Dane K. Fisher and Jingdong Liu

   the application consisting of:

   a. A specification containing:

      (i) 307 pages of a description prior to the claims;

      (ii) 984 pages of a sequence listing;

      (iii) 4 pages of claims (6 claims);

      (iv) a one (1) page abstract;

3. A computer readable disk copy of the sequence listing;

4. Statement Regarding Sequence Submission;

5. Information Disclosure Statement;

6. Form PTO-1449 (22 pages) with 65 accompanying documents; and

7. Two (2) return postcards.

It is respectfully requested that, of the two attached postcards, one be stamped with the filing date of these documents and returned to our courier, and the other, prepaid postcard, be stamped with the filing date and unofficial application number and returned as soon as possible.

This application claims priority under 35 U.S.C §119(e) and/or 35 U.S.C §120 of applications No. 60/067,000 filed November 24, 1997; No. 60/069,472 filed December 9, 1997; No. 60/072,888 filed January 27, 1998; No. 60/074,201 filed February 10, 1998; No. 60/074,282 filed February 10, 1998; No. 60/074,280 filed February 10, 1998; No. 60/074,281 filed February 10, 1998; No. 60/074,566 filed February 12, 1998; No. 60/074,567 filed February 12, 1998; No. 60/074,565 filed February 12, 1998; No. 60/075,462 filed February 19, 1998; No. 60/074,789 filed February 19, 1998; No. 60/075,459 filed February 19, 1998; No. 60/075,461 filed February 19, 1998; No. 60/075,464 filed February 19, 1998; No. 60/075,460 filed February 19, 1998; No. 60/075,463 filed February 19, 1998; No. 60/076,912 filed March 6, 1998; No. 60/077,231 filed March 9, 1998; No. 60/077,229 filed March 9, 1998; No. 60/077,230 filed March 9, 1998; No. 60/078,368 filed March 18, 1998; No. 60/080,844 filed April 7, 1998; No. 60/083,067 filed April 27, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants.(soymon016)" docket No. 38-21(15348)A filed April 29, 1998; No. 60/083,387 filed April 29, 1998; No. 60/083,388 filed April 29, 1998; No. 60/083,389 filed April 29, 1998, "Nucleic Acid Molecules and Other Molecules Associated with the Phosphogluconate Pathway." docket No. 38-21(15365)A filed April 30, 1998; No. 60/085,224 filed May 13, 1998; No. 60/085,223 filed May 13, 1998; No. 60/085,222 filed May 13, 1998; No. 60/086,186 filed May 21, 1998; No. 60/086,187 filed May 21, 1998; No. 60/086,185 filed May 21, 1998; No. 60/086,184 filed May 21, 1998; No. 60/086,183 filed May 21, 1998; No. 60/086,188 filed May 21, 1998; No. 60/087,422 filed June 1, 1998; No. 60/089,524 filed June 16, 1998; No. 60/089,810 filed June 18, 1998; No. 60/089,814 filed June 18, 1998; No. 60/089,793 filed June 18, 1998; No. 60/090,170 filed June 22, 1998; No. 60/090,928 filed June 26, 1998; No. 60/091,035 filed June 29, 1998; No. 60/091,405 filed June 30, 1998; No. 60/092,036 filed July 8, 1998; No. 60/099,667 filed September 9, 1998; No. 60/099,670 filed September 9, 1998; No. 60/099,697 filed September 9, 1998; No. 60/100,674 filed September 16, 1998; No. 60/100,673 filed September 16, 1998; No. 60/100,672 filed September 16, 1998; No. 60/101,131 filed September 21, 1998; No. 60/101,132 filed September 21, 1998; No. 60/101,130 filed September 21, 1998; No. 60/101,508 filed September 22, 1998; No. 60/101,344 filed September 22, 1998; No. 60/101,347 filed September 22, 1998; No. 60/101,343 filed September 22, 1998; No. 60/101,707 filed September 25, 1998; No. 60/104,126 filed October 13, 1998; No. 60/104, 128 filed October 13, 1998; No. 60/104,127 filed October 13, 1998; No. 60/104,124 filed October 13, 1998; No. 60/104,123 filed October 13, 1998; No. 60/109,018 filed November 18, 1998; No. 60/108,996

filed November 18, 1998, "Nucleic Acid Molecules and Other Molecules Associated With Plants" docket No. 38-21(15075)B filed November 24, 1998; No. 09/210,297 filed December 8, 1998, "Nucleic acid Molecules and other Molecules associated with Plants" docket No. 38-21(15668)A filed December 11, 1998; No. 60/113,224 filed December 22, 1998 and "Nucleic Acid Molecules and Other Molecules Associated with Transcription in Plants" docket No. 38-21(15300)B filed January 12, 1999.

In accordance with 37 C.F.R. § 1.821(f), the paper copy of the sequence listing and the computer readable copy of the sequence listing submitted herewith in the above application are the same.

Respectfully submitted,

David R. Marsh (Reg. No. 41,408)
Erik B. Milch (Reg. No. 42,887)

Enclosures

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Nordine Cheikh *et al.*

Appl. No.: To be assigned

Filed: January 26, 1999

For: **Nucleic Acid Molecules and Other Molecules Associated With the Sucrose Pathway**

Art Unit: To be assigned

Examiner: To be assigned

Atty. Docket: 04983.0015.US01/38-21(15089)B

Statement Regarding Sequence Submission

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In accordance with 37 C.F.R. § 1.821(f), the paper copy of the Sequence Listing and the computer readable copy of the Sequence Listing submitted herewith in the above-mentioned application are the same.

Respectfully submitted,

David R. Marsh (Reg. No. 41,408)
Erik B. Milch (Reg. No. 42,887)

Date: January 26, 1999

HOWREY & SIMON
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NUCLEIC ACID MOLECULES AND OTHER MOLECULES ASSOCIATED WITH THE SUCROSE PATHWAY

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority under 35 U.S.C §119(e) and/or 35 U.S.C §120 of applications No. 60/067,000 filed November 24, 1997; No. 60/069,472 filed December 9, 1997; No. 60/072,888 filed January 27, 1998; No. 60/074,201 filed February 10, 1998; No. 60/074,282 filed February 10, 1998; No. 60/074,280 filed February 10, 1998; No. 60/074,281 filed February 10, 1998; No. 60/074,566 filed February 12, 1998; No. 60/074,567 filed February 12, 1998; No. 60/074,565 filed February 12, 1998; No. 60/075,462 filed February 19, 1998; No. 60/074,789 filed February 19, 1998; No. 60/075,459 filed February 19, 1998; No. 60/075,461 filed February 19, 1998; No. 60/075,464 filed February 19, 1998; No. 60/075,460 filed February 19, 1998; No. 60/075,463 filed February 19, 1998; No. 60/076,912 filed March 6, 1998; No. 60/077,231 filed March 9, 1998; No. 60/077,229 filed March 9, 1998; No. 60/077,230 filed March 9, 1998; No. 60/078,368 filed March 18, 1998; No. 60/080,844 filed April 7, 1998; No. 60/083,067 filed April 27, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants.(soymon016)" docket No. 38-21(15348)A filed April 29, 1998; No. 60/083,387 filed April 29, 1998; No. 60/083,388 filed April 29, 1998; No. 60/083,389 filed April 29, 1998, "Nucleic Acid Molecules and Other Molecules Associated with the Phosphogluconate Pathway." docket No. 38-21(15365)A filed April 30, 1998; No. 60/085,224 filed May 13, 1998; No. 60/085,223 filed May 13, 1998; No. 60/085,222 filed May 13, 1998; No. 60/086,186 filed May 21, 1998; No. 60/086,187 filed May 21, 1998; No. 60/086,185 filed May 21, 1998; No. 60/086,184 filed May 21, 1998; No. 60/086,183 filed May 21, 1998; No. 60/086,188 filed May 21, 1998; No. 60/087,422 filed June 1, 1998; No. 60/089,524 filed June 16, 1998; No. 60/089,810 filed June

18, 1998; No. 60/089,814 filed June 18, 1998; No. 60/089,793 filed June 18, 1998; No. 60/090,170 filed June 22, 1998; No. 60/090,928 filed June 26, 1998; No. 60/091,035 filed June 29, 1998; No. 60/091,405 filed June 30, 1998; No. 60/092,036 filed July 8, 1998; No. 60/099,667 filed September 9, 1998; No. 60/099,670 filed September 9, 1998; No. 60/099,697 filed September 9, 1998; No. 60/100,674 filed September 16, 1998; No. 60/100,673 filed September 16, 1998; No. 60/100,672 filed September 16, 1998; No. 60/101,131 filed September 21, 1998; No. 60/101,132 filed September 21, 1998; No. 60/101,130 filed September 21, 1998; No. 60/101,508 filed September 22, 1998; No. 60/101,344 filed September 22, 1998; No. 60/101,347 filed September 22, 1998; No. 60/101,343 filed September 22, 1998; No. 60/101,707 filed September 25, 1998; No. 60/104,126 filed October 13, 1998; No. 60/104, 128 filed October 13, 1998; No. 60/104,127 filed October 13, 1998; No. 60/104,124 filed October 13, 1998; No. 60/104,123 filed October 13, 1998; No. 60/109,018 filed November 18, 1998; No. 60/108,996 filed November 18, 1998, "Nucleic Acid Molecules and Other Molecules Associated With Plants" docket No. 38-21(15075)B filed November 24, 1998; No. 09/210,297 filed December 8, 1998, "Nucleic acid Molecules and other Molecules associated with Plants" docket No. 38-21(15668)A filed December 11, 1998; No. 60/113,224 filed December 22, 1998 and "Nucleic Acid Molecules and Other Molecules Associated with Transcription in Plants" docket No. 38-21(15300)B filed January 12, 1999, all of which are herein incorporated by reference in their entirety.

FIELD OF THE INVENTION

The present invention is in the field of plant biochemistry. More specifically the invention relates to nucleic acid sequences from plant cells, in particular, nucleic acid sequences from maize and soybean plants associated with the sucrose pathway. The invention encompasses

nucleic acid molecules that encode proteins and fragments of proteins. In addition, the invention also encompasses proteins and fragments of proteins so encoded and antibodies capable of binding these proteins or fragments. The invention also relates to methods of using the nucleic acid molecules, proteins and fragments of proteins and antibodies, for example for genome mapping, gene identification and analysis, plant breeding, preparation of constructs for use in plant gene expression and transgenic plants.

BACKGROUND OF THE INVENTION

Carbon fixed during photosynthesis is either retained in the chloroplast and converted to a storage carbohydrate, for example, starch, or it is transferred to the cytosol in the form of triose phosphates and converted to sucrose. The newly synthesized sucrose in source tissues is a major transported form of reduced carbon in higher plants and can be either metabolized into other carbohydrates, stored in the vacuole or exported to other plant tissues. Plant tissues where sucrose is synthesized, such as leaves, are often referred to as 'source' tissues. Translocated sucrose is retained in 'sink' tissues (such as expanding leaves, growing seeds, flowers, roots or tubers, and fruit) and may be assimilated, or further metabolized to sustain cell maintenance or fuel growth, or be converted to alternative storage compounds (*e.g.*, starch, fats). The relative type and size of these carbohydrate pools vary during tissue development, between different plant species, and within the same species subject to different environmental conditions. Such differences are reported to affect the yield and quality of agricultural produce.

Sucrose synthesis and catabolism are reported to be highly coordinated and regulated processes that may also be coordinately regulated with other dedicated metabolic pathways in a particular plant, plant organ or cell type. Sucrose synthesis is reported to be coordinately regulated with starch metabolism and photosynthesis in green 'source' plant tissues. Sucrose

supply by transport mechanisms to actively growing 'sink' tissues is reported to be coordinated with plant development. In growing sink tissues, the supply of carbohydrate is reported to be important to other metabolic pathways and physiological processes including respiration, starch biosynthesis, cell wall biogenesis, lipid and protein biosynthesis. Sucrose synthesis and/or transport is also reported to play a role in the carbohydrate capacity that is available to growing fruits and seeds. Sucrose resynthesis during seed germination is reported to play a role in seedling vigor and agronomic stand establishment in many plant species during early plant development.

In many plant species, enzymes of pathways involved in sucrose metabolism can play a role in plant physiology and plant growth and development. Compartmentation and temporal regulation of genes and enzymes of sucrose metabolic pathways can allow multiple pathways to utilize sucrose as a common metabolite. Flux through a particular sucrose metabolic pathway can define the utilization of sucrose in any tissue or developmental stage. Sucrose and its metabolite products have been reported to play a role in gene regulation and expression of the sucrose pathway and other metabolic pathways in plants.

Reviews on sucrose metabolism in plants include Avigad, In: *Encyclopedia of Plant Physiology*, Vol 13A, Loewus and Tanner, eds., Springer Verlag, Heidelberg, 217-347 (1982); Hawker, In: *Biochemistry of Storage Carbohydrates in Green Plants,* Dey and Dixon, eds., Academic Press, London, 1-51 (1985); Huber *et al.*, In: *Carbon Partitioning Within and Between Organisms*, Pollock *et al.*, eds., Bios Scientific, Oxford, 1-26 (1992); Stitt *et al.*, In: *Biochemistry of Plants*, Vol 10, Hatch and Boardman, eds., Academic Press, New York, 327-407 (1987); Quick and Schaffer, In: *Photoassimilate Distribution In: Plants And Crops*, Zamski and

Schaffer, eds., Marcel Dekker Inc., New York, 115-156 (1996), all of which are herein incorporated by reference in their entirety.

The synthesis of sucrose precursors (triose and hexose phosphates) is derived from either photosynthetic CO_2 fixation or degradation of previously deposited storage reserves. One substrate for sucrose synthesis in photosynthetic tissues is three carbon sugar phosphates. These are exported from the chloroplast during photosynthesis, predominantly in the form of triose phosphates. The pool of triose phosphates, dihydroxyacetone phosphate ("DHAP"), and glyceraldehyde-3-phosphate ("GAP"), is maintained at equilibrium within the cytoplasm by triose phosphate isomerase (EC 5.3.1.1). A subsequent reaction involves an aldol condensation of DHAP and GAP, catalyzed by the enzyme fructose 1,6-bisphosphate aldolase (often called aldolase) (EC 4.1.2.13) to form fructose 1,6-bisphosphate ("F1,6BP"). Fructose-1,6-bisphosphatase ("FBPase") (EC 3.1.3.11) catalyzes the cleavage of phosphate from the C1 carbon of fructose-1,6-bisphosphate to form fructose-6-phosphate ("F6P"). This reaction is essentially irreversible and has been reported to represent the first committed step within the pathway of sucrose synthesis. The cytosolic FBPase has been reported to be subject to allosteric regulation and may serve to coordinate the rate of sucrose synthesis with that of photosynthesis. Fructose 2,6-bisphosphate ("F2,6BP") is reported to be a regulator of FBPase (Black *et al.,* In: *Regulation of Carbohydrate Partitioning In Photosynthetic Tissue*, Heath and Preiss, eds., Waverly, Baltimore, 109-126 (1985); Stitt *et al.,* In: *Biochemistry Of Plants*, Vol. 10, Hatch and Boardman, eds., Academic Press, New York, 327-407 (1987), both of which are herein incorporated by reference in their entirety). The concentration of F2,6BP is reported to be controlled in plants by two enzymes, fructose-2,6-bisphosphatase (F2,6Bpase) (EC 3.1.3.46) and fructose-6-phosphate,2-kinase (F6P,2K) (EC 2.7.1.105) (Stitt, *Annu. Rev. Plant Physiol. Plant Mol. Biol. 41*: 153-181 (1990), the entirety of which is herein incorporated by reference).

Glucose-6-phosphate ("G6P") and glucose-1-phosphate ("G1P") are reported to be maintained in equilibrium with the F6P pool by the action of phosphoglucoisomerase ("PGI")

(EC 5.3.1.9) and phosphoglucomutase ("PGM") (EC 5.4.2.2), respectively. Uridine diphosphate glucose ("UDPG") and pyrophosphate ("PPi") are formed from uridine triphosphate ("UTP") and G1P catalyzed by the enzyme UDPG-pyrophosphorylase ("UDPGase") (EC 2.7.7.9). This reaction is reversible and net flux in the direction of sucrose synthesis is reported to require removal of its products, particularly PPi. A pyrophosphate-dependent proton pump, vacuolar H^+-translocating-pyrophosphatase (EC 3.6.1.1), has been identified within the vacuolar membrane and has been reported to utilize pyrophosphate to sustain a proton gradient formed between these two compartments (Rea *et al.*, *Trends in Biol. Sci. 17*: 348-353 (1992), the entirety of which is herein incorporated by reference).

A pyrophosphate-dependent fructose-6-phosphate phosphotransferase ("PFP") (EC 2.7.1.90) is also present in the cytoplasm and catalyzes the reversible production of F1,6BP and Pi from F6P and PPi. One reported function of PFP is to operate in a futile cycle with the cytosolic FBPase, and function as a "pseudopyrophosphatase" recycling PPi. Uridine diphosphate glucose is then combined with F6P to form sucrose-6-phosphate ("S6P"). This reaction is catalyzed by sucrose phosphate synthase ("SPS") (EC 2.4.1.14). Attachment of UDP to the glucose moiety activates the C1 carbon atom of UDPG, which is necessary for the subsequent formation of a glycosidic bond in sucrose. In certain organisms, SPS is capable of using adenine diphosphate glucose ("ADPG"), instead of UDPG, as a substrate. The use of nucleotide biphosphate sugars is a feature of metabolic pathways leading to the production of disaccharides and polysaccharides. SPS is reported to be subject to allosteric and covalent regulation and, in conjunction with the cytosolic FBPase, reportedly serves to coordinate the rate of sucrose synthesis with the rate of photosynthesis. The reported final reaction in the pathway is catalyzed by sucrose-6-phosphate phosphatase ("SPPase" or "SPP") (EC 3.1.3.24), which catalyzes the hydrolysis of S6P to sucrose. It has been reported that SPS and SPPase may associate to form a multienzyme complex, that the rate of sucrose-6-phosphate synthesis by SPS is enhanced in the presence of SPP, and that the rate of sucrose-6-phosphate hydrolysis by SPP is

increased in the presence of SPS (Echeverria *et al., Plant Physiol. 115*: 223-227 (1997), herein incorporated by reference in its entirety).

I. SUCROSE SYNTHESIS

Reviews describing fructose-1,6-bisphosphatase ("FBPase", EC 3.1.3.11) include those by Hers and Van Shaftingen, *Biochem J. 206*:1-12 (1982), the entirety of which is herein incorporated by reference, and Stitt, *Annu. Rev. Plant Physiol. Plant Mol. Biol. 41*:153-181 (1990). Two isoforms of FBPase are reported to exist in plants. The first isoform is associated with the plastid and occurs largely in photosynthetic plastids. The second isoform, located in the cytoplasm, is reported to be involved in both gluconeogenesis and sucrose synthesis (Zimmerman *et al., J. Biol. Chem. 253*: 5952-5956 (1978); Stitt and Heldt, *Planta 164:* 179-188 (1985), both of which are hereby incorporated by reference in their entirety). FBPase catalyzes an irreversible reaction in the direction of F6P synthesis *in vivo* and has been reported to represent the first committed step in the pathway of sucrose synthesis. The properties of the enzyme are reported to involve the action of several regulatory metabolites (Stitt *et al.*, In: *Biochemistry Of Plants*, Vol. 10, Hatch and Boardman, eds., Academic Press, New York, 327-407 (1987)). The enzyme reportedly has a high affinity for its substrate F1,6BP, a requirement for Mg^{2+}, a requirement for a neutral pH, is weakly inhibited (Km 2-4 μm) by adenosine monophosphate (AMP), and is strongly inhibited by the regulatory metabolite F2,6BP (Hers and Van Shaftingen, *Biochem J. 206*: 1-12 (1982); Black *et al.*, In: *Regulation of Carbohydrate Partitioning In Photosynthetic Tissue*, Heath and Preiss, eds., Waverly, Baltimore, 109-126 (1985); Huber, *Annu. Rev. Plant Physiol. 37*: 233-246 (1986); Stitt *et al.*, In: *Biochemistry Of Plants*, Vol. 10, Hatch and Boardman, eds., Academic Press, New York, 327-407 (1987), all of which are herein incorporated by reference in their entirety). F2,6BP is also an activator of PFP and reportedly plays a role in the regulation of gluconeogenetic and respiratory metabolism.

The concentration of F2,6BP is reportedly determined in plants by two enzymes, fructose-2,6-bisphosphatase ("F2,6BPase") (EC 3.1.3.46) and fructose-6-phosphate,2-kinase

("F6P,2K") (EC 2.7.1.105). A review of these enzymes is provided by Stitt, *Annu. Rev. Plant Physiol. Plant Mol. Biol. 41:* 153-181 (1990). Regulation of the activity of the F1,6FBPase and the rate of sucrose synthesis is reported to be, at least in part, brought about by changes in the concentration of F2,6BP.

Sucrose phosphate synthase (SPS (EC 2.4.1.14)) catalyzes a reaction that is displaced from equilibrium *in vivo* in the direction of S6P synthesis and is reported as an essentially irreversible reaction *in vivo* (Stitt *et al.*, In: *Biochemistry Of Plants*, Vol. 10, Hatch and Boardman, eds., Academic Press, New York, 327-407 (1987); Lunn and Rees, *Biochem. J. 267*: 739-743 (1990), the entirety of which is herein incorporated by reference; U.S. Patent No. 5,665,892, the entirety of which is herein incorporated by reference). SPS has been purified from spinach and *Zea mays*, and the amino acid and cDNA sequences have been published (Worrel *et al.*, *Plant Cell 3*:1121-1130 (1991); Klein *et al.*, *Planta 190*: 498-510 (1993); Sonnewald *et al.*, *Planta 189*: 174-181 (1993), all of which are herein incorporated by reference in their entirety). The enzyme has a subunit molecular weight of 117 kDa from spinach (Klein *et al., Planta 190*: 498-510 (1993); Sonnewald *et al.*, *Planta 189*: 174-181 (1993), both of which are herein incorporated by reference) and pea (Lunn and Rees, *Phytochem.* 29: 1057-1063 (1990), the entirety of which is herein incorporated by reference) and 135 kDa from *Zea mays* (Worrel *et al.*, *Plant Cell 3*:1121-1130 (1991)). The native enzyme reportedly exists as a tetramer (Walker and Huber, *Plant Physiol. 89*: 518-524 (1988); Lunn and Rees, *Phytochem. 29*: 1057-1063 (1990); Worrel *et al., Plant Cell 3*:1121-1130 (1991), although dimeric molecular weights have been reported (Klein *et al., Planta 190*: 498-510 (1993), the entirety of which is herein incorporated by reference). Activity has been observed for SPS at both dimeric and tetrameric molecular weights (Sonnewald *et al.*, *Planta 189*:174-181 (1993), the entirety of which is herein incorporated by reference).

SPS is located in the cytosol, has a neutral pH optimum, and has been detected in all plant tissues which undertake active sucrose synthesis. SPS is also reported to undertake active sucrose synthesis. An increase in abundance of the enzyme is has been reported during the

development of leaves, germination of seeds and ripening of fruit. The enzyme has been reported to be subject to regulation by metabolites and is activated by G6P and is inhibited by Pi. Pi and GP6 are reported to act competitively at an allosteric site of the enzyme. In the presence of high Pi concentrations, the enzyme is phosphorylated which reduces activity of the enzyme. It has also been reported that light-induced photosynthesis increases the activity of SPS in crude extracts (Sicher and Kremer, *Plant Physiol. 79*: 910-912 (1984), Sicher and Kremer, *Plant Physiol. 79*: 695-698 (1985); Pollock and Housley, *Ann. Bot. 55*: 593-596 (1985), all of which are herein incorporated by reference in their entirety). In addition, it has been reported that compounds altering the phosphate status of the leaf can simulate the effects of light. Feeding leaves mannose, which sequesters phosphate by its conversion to the non-metabolized mannose-6-P, has been reported to cause activation of SPS (Stitt *et al.*, *Planta 174*: 217-230 (1988), the entirety of which is herein incorporated by reference).

The phosphorylation and dephosphorylation of SPS is catalyzed by SPS-phosphatase and SPS-kinase, respectively (Huber *et al.*, *Plant Physiol.* 99: 1275-1278 (1992). Hydrolysis of sucrose-6-P to sucrose is catalyzed by sucrose-6-phosphatase (SPPase or SPP) (EC 3.1.3.24). The activity of both SPS and SPP is reported to be affected by a multienzyme complex between SPS and SPP (Echeverria *et al., Plant Physiol. 115*: 223-227 (1997)).

Regulatory properties of SPS and FBPase are reported to coordinate the rate of sucrose synthesis with that of photosynthesis (Stitt, In: *Plant Physiology, Biochemistry and Molecular Biology*, Dennis and Turpin, eds., Singapore, London, 319-340 (1990), the entirety of which is herein incorporated by reference). When photosynthesis produces triose phosphate in excess of the rate of sucrose synthesis, a feed-forward activation of sucrose synthesis occurs. Triose phosphate crosses the chloroplast membrane in exchange for cytosolic Pi. Under these conditions, F6P,2-kinase activity is reduced and the inhibition of F2,6Bpase is decreased.

As cytosolic F2,6BP falls, F2,6BPase activity increases, and F6P levels increase. Hexose phosphate levels are reported to increase due to PGM and PGI, and with low Pi, activate SPS and F1,6BPase. Reduction in rate of photosynthesis must result in a deactivation of sucrose

synthesis, which occurs through decreased cytosolic triose-P, increased Pi and ultimately increased F2,6BP concentration and reduced SPS activity (Stitt, *Phil. Trans. R Soc. Lond. B 342*: 225-233 (1993); Huber *et al., Plant Physiol. 99*: 1275-1278 (1992); Neuhaus *et al., Planta 181*: 583-592 (1990), both of which are herein incorporated by reference).

II. METABOLIC PATHWAYS OF SUCROSE CATABOLISM

Sucrose can initially be cleaved by invertases (EC 3.2.1.26) or by sucrose synthases (EC 2.4.1.13). Invertases, which are classified as acid or alkaline in pH preference (Karuppiah *et al.*, *Plant Physiol. 91*: 993-998 (1989); Fahrendorf and Beck, *Planta 180*: 237-244 (1990); Iwatsubo *et al., Biosc. Biotech. Biochem. 56:* 1959-1962 (1992); Unger *et al.*, *Plant Physiol. 104*: 1351-1357 (1994); Avigad, In: *Encyclopedia of Plant Physiology*, Vol 13A, Loewus and Tanner, eds., Springer Verlag, Heidelberg, 217-347 (1982), all of which are herein incorporated by reference in their entirety), irreversibly cleave sucrose into glucose and fructose, both of which is usually phosphorylated for further metabolism. The invertase pathway usually is associated with rapidly growing sink tissues such as expanding leaves, expanding internodes, flower petals, and early fruit development (Avigad, In: *Encyclopedia of Plant Physiology*, Vol 13A, Loewus and Tanner, eds., Springer Verlag, Heidelberg, 217-347 (1982); Huber, *Plant Physiol. 91*: 656-662 (1989); Morris and Arthur, *Phytochem. 23*: 2163-2167 (1984); Hawker *et al.*, *Phytochem. 15*: 1441-1443 (1976); Schaffer *et al.*, *Plant Physiol. 69*: 151-155 (1987), all of which are herein incorporated by reference in their entirety).

Sucrose synthase carries out the kinetically reversible transglycosylation of sucrose and UDP into fructose and UDPG, requiring only the phosphorylation of fructose for additional metabolism. Polysaccharide biosynthesis in sink tissues may utilize a sucrose synthase mediated sucrose catabolism (Avigad, In: *Encyclopedia of Plant Physiology*, Vol 13A, Loewus and Tanner, eds., Springer Verlag, Heidelberg, 217-347 (1982); Doehlert *et al., Plant Physiol. 86*: 1013-1019 (1988); Dale and Housley *Plant Physiol. 82*: 7-10 (1986), all of which are herein

incorporated by reference). Respiring tissues reportedly utilize either sucrose synthase or invertase metabolic pathways (Echeverria and Humphreys, *Phytochem. 23*: 2173-2178 (1984); Uritani and Asahi, In: *The Biochemistry of Plants* Vol. 2, Davies, ed., Academic Press, New York, 463-487 (1980), all of which are herein incorporated by reference in their entirety). Tissues that are undergoing respiration, starch biosynthesis, amino acid and fatty acid synthesis, rapid expansion or growth, and other cellular metabolism, can utilize several sucrose metabolic pathways which may be temporally or compartmentally regulated (Doehlert *et al., Plant Physiol. 86:* 1013-1019 (1988); Doehlert, *Plant Physiol. 78:* 560-567 (1990); Doehlert and Choury, In: *Recent Advances in Phloem Transport and Assimilate Compartmentation*, Bonnemain *et al.*, eds., Ouest editions, Nantes, France, 187-195 (1991); Delmer and Stone, In: *The Biochemistry of Plants*, Vol. 14, Preiss, ed., Academic Press, San Diego, 373-420 (1988); Maas *et al., EMBO J. 9*: 3447-3452 (1990), all of which are herein incorporated by reference in their entirety).

Hexose kinases are a class of enzymes responsible for the phosphorylation of hexoses, and are classified into two groups. Hexokinase (EC 2.7.1.1) can phosphorylate either glucose or fructose, with different isoforms often unique to different tissues or plant species. Different isoforms can have affinities for different hexoses (Turner and Copeland, *Plant Physiol. 68*: 1123-1127 (1981), the entirety of which is herein incorporated by reference; Copeland and Turner, In: *The Biochemistry of Plants*, *Vol. 11*, Stumpf and Conn, eds., Academic Press, New York, 107-128 (1987), the entirety of which is herein incorporated by reference). Hexokinases include fructokinases (EC 2.7.1.11), which typically have specific affinities for fructose (Doehlert, *Plant Physiol. 89*: 1042-1048 (1989); Renz and Stitt *Planta 190*: 166-175 (1993), both of which are herein incorporated by reference). Fructokinases can also be specific in their affinity for nucleotides. The extent to which a fructokinase utilizes UTP may play a physiological role in

how efficiently UDP can be recycled for sucrose synthase activity in a particular tissue (Huber and Akazawa, *Plant Physiol. 81*: 1008-1013 (1986); Xu *et al.*, *Plant Physiol. 90*: 635-642 (1989), both of which are herein incorporated by reference). UDP levels for the sucrose synthase reaction may be maintained, even in the case of an ATP-specific fructokinase, by the enzyme NDP-kinase (EC 2.7.4.6).

NDP-kinase has been reported in several plant tissues (Kirkland and Turner, *J. Biochem. 72:* 716-720 (1959); Bryce and Nelson, *Plant Physiol. 63*: 312-317 (1979); Dancer *et al., Plant Physiol. 92*: 637-641 (1990); Yano *et al., Plant Molec. Biol. 23*: 1087-1090 (1993), all of which are herein incorporated by reference in their entirety). Fructokinase can be substrate inhibited by fructose. In addition, sucrose synthase can be inhibited by fructose (Doehlert, *Plant Sci. 52*: 153-157 (1987); Morell and Copeland, *Plant Physiol. 78*: 140-154 (1985), Ross and Davies, *Plant Physiol. 100*: 1008-1013 (1992), all of which are herein incorporated by reference in their entirety). Whereas plant tissues where sucrose is catabolized by sucrose synthase predominantly contain fructokinases (Xu *et al., Plant Physiol. 90*: 635-642 (1989); Kursanov *et al., Soviet Plant Physiol. 37:* 507-515 (1990); Ross *et al., Plant Physiol. 90*: 748-756 (1994)), plant tissues where sucrose is catabolized by invertase often contain hexokinases (Nakamura *et al., Plant Physiol. 81*: 215-220 (1991)). Tissues which have both invertase and sucrose synthase activity may contain both hexose kinases (Nakamura *et al., Plant Physiol. 81*: 215-220 (1991), the entirety of which is herein incorporated by reference). F6P resulting from hexose kinase activity can be further metabolized in glycolysis or used in resynthesis of sucrose by SPS. G6P resulting from hexose kinase activity can enter the pentose phosphate pathway, via G6P dehydrogenase (EC 1.1.1.49), or be converted to F6P by phosphoglucoisomerase ("PGI") (EC 5.3.1.9) or G1P by phosphoglucomutase ("PGM") (EC 5.4.2.2) (Rees, In: *Encyclopedia of Plant Physiology* Vol 18,

Douce and Day, eds., Springer Verlag, Berlin, 391-417 (1985); Copeland and Turner, In: *The Biochemistry of Plants* Vol. 11, Stumpf and Conn, eds., Academic Press, New York, 107-128 (1987); Foster and Smith, *Planta 180*: 237-244 (1993), all of which are herein incorporated by reference in their entirety).

PGI and PGM are reported to be ubiquitous and reversible with commitments of G6P to either F6P or G1P resulting from fluxes in metabolites further along each pathway, *i.e.*, depending on the cell needs for glycolysis (F6P) or starch biosynthesis (G1P) (Edwards and Rees, *Phytochem. 25*: 2033-2039 (1986); Kursanov *et al., Soviet Plant Physiol. 37*: 507-515 (1990); Tobias *et al., Plant Physiol. 99*: 140-145 (1992), all of which are herein incorporated by reference in their entirety). UDPG formed by sucrose synthase may be utilized directly for cellulose or callose biosynthesis via UDP-glucose dehydrogenase (EC 1.1.1.2) (Robertson *et al., Phytochem. 39*: 21-28 (1995), the entirety of which is herein incorporated by reference), can be used for sucrose synthesis by SPS or sucrose synthase, or for glycolysis or starch metabolism dependent on further metabolism by UDP-glucose pyrophosphorylase (EC 2.7.7.9). UDP-glucose phosphorylase has been reported to be a largely reversible enzyme (Kleczkowski, *Phytochem. 37*: 1507-1515 (1994), the entirety of which is herein incorporated by reference). Flux through UDP-glucose pyrophosphorylase is reported to be influenced by metabolite levels and utilization of reaction products further along in the pathways (Doehlert *et al., Plant Physiol. 86*: 1013-1019 (1988); Huber and Akazawa, *Plant Physiol. 81*: 1008-1013 (1986); Zrenner *et al., Planta 190*: 247-252 (1993), all of which are herein incorporated by reference in their entirety). The reversibility of PGI, PGM and UDPGPPase has been reported to provide for metabolic variability and networking in metabolism, independent of which initial enzyme cleaved sucrose.

The fate of F6P reportedly plays a role in carbohydrate metabolism. NTP-phosphofructokinase (PFK) (EC 2.7.1.11) (Copeland and Turner, In: *The Biochemistry of Plants* Vol. 11, Stumpf and Conn, eds., Academic Press, New York, 107-128 (1987); Dennis and Greyson, *Plant Physiol. 69*: 395-404 (1987); Rees, In: *The Biochemistry of Plants* Vol. 14, Preiss, ed., Academic Press, San Diego, 1-33 (1988), all of which are herein incorporated by reference in their entirety) is reported to irreversibly convert F6P to F16BP and is associated with glycolysis. The reverse reaction of F16BP to F6P, associated with gluconeogenesis, is essentially irreversible, and is catalyzed by FBPase (EC 3.1.3.11) (Black *et al., Plant Physiol. 69*: 387-394 (1987). Both reactions may be carried out in a reversible manner by a PPi-dependent fructose-6-phosphate phosphotransferase or PPi-phosphofructokinase (PFP; EC 2.7.1.90) (Black *et al., Plant Physiol. 69*: 387-394 (1987).

PPi-dependent fructose-6-phosphate phosphotransferase or PPi-phosphofructokinase is reported to play a role in the generation of biosynthetic intermediates (Dennis and Greyson, *Plant Physiol. 69*: 395-404 (1987); Tobias *et al., Plant Physiol. 99*: 146-152 (1992), the entirety of which is herein incorporated by reference) in addition to the cycling of PPi for UDPGPPase and ultimately UDP for sucrose synthase (Huber and Akazawa, *Plant Physiol. 81*: 1008-1013 (1986); Black *et al., Plant Physiol. 69*: 387-394 (1987); Rees, In: *The Biochemistry of Plants* Vol. 14, Preiss, ed., Academic Press, San Diego, 1-33 (1988), all of which are herein incorporated by reference in their entirety).

II. EXPRESSED SEQUENCE TAG NUCLEIC ACID MOLECULES

Expressed sequence tags, or ESTs are randomly sequenced members of a cDNA library (or complementary DNA)(McCombie *et al., Nature Genetics 1:*124-130 (1992); Kurata *et al., Nature Genetics 8:*365-372 (1994); Okubo *et al., Nature Genetics 2:*173-179 (1992), all of which

references are incorporated herein in their entirety). The randomly selected clones comprise insets that can represent a copy of up to the full length of a mRNA transcript.

Using conventional methodologies, cDNA libraries can be constructed from the mRNA (messenger RNA) of a given tissue or organism using poly dT primers and reverse transcriptase (Efstratiadis *et al., Cell 7*:279-3680 (1976), the entirety of which is herein incorporated by reference; Higuchi *et al., Proc. Natl. Acad. Sci. (U.S.A.) 73*:3146-3150 (1976), the entirety of which is herein incorporated by reference; Maniatis *et al., Cell 8*:163-182 (1976) the entirety of which is herein incorporated by reference; Land *et al., Nucleic Acids Res. 9*:2251-2266 (1981), the entirety of which is herein incorporated by reference; Okayama *et al., Mol. Cell. Biol. 2*:161-170 (1982), the entirety of which is herein incorporated by reference; Gubler *et al., Gene 25*:263-269 (1983), the entirety of which is herein incorporated by reference).

Several methods may be employed to obtain full-length cDNA constructs. For example, terminal transferase can be used to add homopolymeric tails of dC residues to the free 3' hydroxyl groups (Land *et al., Nucleic Acids Res. 9*:2251-2266 (1981), the entirety of which is herein incorporated by reference). This tail can then be hybridized by a poly dG oligo which can act as a primer for the synthesis of full length second strand cDNA. Okayama and Berg, *Mol. Cell. Biol. 2:*161-170 (1982), the entirety of which is herein incorporated by reference, report a method for obtaining full length cDNA constructs. This method has been simplified by using synthetic primer-adapters that have both homopolymeric tails for priming the synthesis of the first and second strands and restriction sites for cloning into plasmids (Coleclough *et al., Gene 34*:305-314 (1985), the entirety of which is herein incorporated by reference) and bacteriophage vectors (Krawinkel *et al., Nucleic Acids Res. 14*:1913 (1986), the entirety of which is herein

incorporated by reference; Han *et al.*, *Nucleic Acids Res. 15*:6304 (1987), the entirety of which is herein incorporated by reference).

These strategies have been coupled with additional strategies for isolating rare mRNA populations. For example, a typical mammalian cell contains between 10,000 and 30,000 different mRNA sequences (Davidson, *Gene Activity in Early Development*, 2nd ed., Academic Press, New York (1976), the entirety of which is herein incorporated by reference). The number of clones required to achieve a given probability that a low-abundance mRNA will be present in a cDNA library is $N = (\ln(1-P))/(\ln(1-1/n))$ where N is the number of clones required, P is the probability desired and 1/n is the fractional proportion of the total mRNA that is represented by a single rare mRNA (Sambrook *et al.*, *Molecular Cloning: A Laboratory Manual*, 2nd ed., Cold Spring Harbor Laboratory Press (1989), the entirety of which is herein incorporated by reference).

A method to enrich preparations of mRNA for sequences of interest is to fractionate by size. One such method is to fractionate by electrophoresis through an agarose gel (Pennica *et al.*, *Nature 301*:214-221 (1983), the entirety of which is herein incorporated by reference). Another such method employs sucrose gradient centrifugation in the presence of an agent, such as methylmercuric hydroxide, that denatures secondary structure in RNA (Schweinfest *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 79*:4997-5000 (1982), the entirety of which is herein incorporated by reference).

A frequently adopted method is to construct equalized or normalized cDNA libraries (Ko, *Nucleic Acids Res. 18*:5705-5711 (1990), the entirety of which is herein incorporated by reference; Patanjali *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 88*:1943-1947 (1991), the entirety of which is herein incorporated by reference). Typically, the cDNA population is normalized by

subtractive hybridization (Schmid *et al.*, *J. Neurochem. 48*:307-312 (1987), the entirety of which is herein incorporated by reference; Fargnoli *et al.*, *Anal. Biochem. 187*:364-373 (1990), the entirety of which is herein incorporated by reference; Travis *et al.*, *Proc. Natl. Acad. Sci (U.S.A.) 85*:1696-1700 (1988), the entirety of which is herein incorporated by reference; Kato, *Eur. J. Neurosci. 2*:704-711 (1990); and Schweinfest *et al.*, *Genet. Anal. Tech. Appl. 7*:64-70 (1990), the entirety of which is herein incorporated by reference). Subtraction represents another method for reducing the population of certain sequences in the cDNA library (Swaroop *et al.*, *Nucleic Acids Res. 19*:1954 (1991), the entirety of which is herein incorporated by reference).

ESTs can be sequenced by a number of methods. Two basic methods may be used for DNA sequencing, the chain termination method of Sanger *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 74:*5463-5467 (1977), the entirety of which is herein incorporated by reference and the chemical degradation method of Maxam and Gilbert, *Proc. Nat. Acad. Sci. (U.S.A.) 74:*560-564 (1977), the entirety of which is herein incorporated by reference. Automation and advances in technology such as the replacement of radioisotopes with fluorescence-based sequencing have reduced the effort required to sequence DNA (Craxton, *Methods 2:*20-26 (1991), the entirety of which is herein incorporated by reference; Ju *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 92:*4347-4351 (1995), the entirety of which is herein incorporated by reference; Tabor and Richardson, *Proc. Natl. Acad. Sci. (U.S.A.) 92:*6339-6343 (1995), the entirety of which is herein incorporated by reference). Automated sequencers are available from, for example, Pharmacia Biotech, Inc., Piscataway, New Jersey (Pharmacia ALF), LI-COR, Inc., Lincoln, Nebraska (LI-COR 4,000) and Millipore, Bedford, Massachusetts (Millipore BaseStation).

In addition, advances in capillary gel electrophoresis have also reduced the effort required to sequence DNA and such advances provide a rapid high resolution approach for sequencing

DNA samples (Swerdlow and Gesteland, *Nucleic Acids Res. 18*:1415-1419 (1990); Smith, *Nature 349*:812-813 (1991); Luckey *et al.*, *Methods Enzymol. 218*:154-172 (1993); Lu *et al.*, *J. Chromatog. A. 680*:497-501 (1994); Carson *et al.*, *Anal. Chem. 65*:3219-3226 (1993); Huang *et al.*, *Anal. Chem. 64*:2149-2154 (1992); Kheterpal *et al.*, *Electrophoresis 17*:1852-1859 (1996); Quesada and Zhang, *Electrophoresis 17*:1841-1851 (1996); Baba, *Yakugaku Zasshi 117*:265-281 (1997), all of which are herein incorporated by reference in their entirety).

ESTs longer than 150 nucleotides have been found to be useful for similarity searches and mapping (Adams *et al.*, *Science 252*:1651-1656 (1991), herein incorporated by reference). ESTs, which can represent copies of up to the full length transcript, may be partially or completely sequenced. Between 150-450 nucleotides of sequence information is usually generated as this is the length of sequence information that is routinely and reliably produced using single run sequence data. Typically, only single run sequence data is obtained from the cDNA library (Adams *et al.*, *Science 252*:1651-1656 (1991). Automated single run sequencing typically results in an approximately 2-3% error or base ambiguity rate (Boguski *et al.*, *Nature Genetics 4*:332-333 (1993), the entirety of which is herein incorporated by reference).

EST databases have been constructed or partially constructed from, for example, *C. elegans* (McCombrie *et al.*, *Nature Genetics 1*:124-131 (1992)), human liver cell line HepG2 (Okubo *et al.*, *Nature Genetics 2*:173-179 (1992)), human brain RNA (Adams *et al.*, *Science 252*:1651-1656 (1991); Adams *et al.*, *Nature 355*:632-635 (1992)), *Arabidopsis,* (Newman *et al.*, *Plant Physiol.* 106:1241-1255 (1994)); and rice (Kurata *et al.*, *Nature Genetics 8*:365-372 (1994)).

III. SEQUENCE COMPARISONS

A characteristic feature of a DNA sequence is that it can be compared with other DNA sequences. Sequence comparisons can be undertaken by determining the similarity of the test or query sequence with sequences in publicly available or proprietary databases ("similarity analysis") or by searching for certain motifs ("intrinsic sequence analysis")(e.g. *cis* elements)(Coulson, *Trends in Biotechnology 12:*76-80 (1994), the entirety of which is herein incorporated by reference); Birren *et al., Genome Analysis 1*: Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York 543-559 (1997), the entirety of which is herein incorporated by reference).

Similarity analysis includes database search and alignment. Examples of public databases include the DNA Database of Japan (DDBJ)(http://www.ddbj.nig.ac.jp/); Genebank (http://www.ncbi.nlm.nih.gov/Web/Search/Index.htlm); and the European Molecular Biology Laboratory Nucleic Acid Sequence Database (EMBL) (http://www.ebi.ac.uk/ebi_docs/embl_db/embl-db.html). Other appropriate databases include dbEST (http://www.ncbi.nlm.nih.gov/dbEST/index.html), SwissProt (http://www.ebi.ac.uk/ebi_docs/swisprot_db/swisshome.html), PIR (http://www-nbrt.georgetown.edu/pir/) and The Institute for Genome Research (http://www.tigr.org/tdb/tdb.html)

A number of different search algorithms have been developed, one example of which are the suite of programs referred to as BLAST programs. There are five implementations of BLAST, three designed for nucleotide sequences queries (BLASTN, BLASTX and TBLASTX) and two designed for protein sequence queries (BLASTP and TBLASTN) (Coulson, *Trends in Biotechnology 12:*76-80 (1994); Birren *et al., Genome Analysis 1,* Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York 543-559 (1997)).

BLASTN takes a nucleotide sequence (the query sequence) and its reverse complement and searches them against a nucleotide sequence database. BLASTN was designed for speed, not maximum sensitivity and may not find distantly related coding sequences. BLASTX takes a nucleotide sequence, translates it in three forward reading frames and three reverse complement reading frames and then compares the six translations against a protein sequence database. BLASTX is useful for sensitive analysis of preliminary (single-pass) sequence data and is tolerant of sequencing errors (Gish and States, *Nature Genetics 3:*266-272 (1993), the entirety of which is herein incorporated by reference). BLASTN and BLASTX may be used in concert for analyzing EST data (Coulson, *Trends in Biotechnology 12:*76-80 (1994); Birren *et al., Genome Analysis 1:*543-559 (1997)).

Given a coding nucleotide sequence and the protein it encodes, it is often preferable to use the protein as the query sequence to search a database because of the greatly increased sensitivity to detect more subtle relationships. This is due to the larger alphabet of proteins (20 amino acids) compared with the alphabet of nucleic acid sequences (4 bases), where it is far easier to obtain a match by chance. In addition, with nucleotide alignments, only a match (positive score) or a mismatch (negative score) is obtained, but with proteins, the presence of conservative amino acid substitutions can be taken into account. Here, a mismatch may yield a positive score if the non-identical residue has physical/chemical properties similar to the one it replaced. Various scoring matrices are used to supply the substitution scores of all possible amino acid pairs. A general purpose scoring system is the BLOSUM62 matrix (Henikoff and Henikoff, *Proteins 17:*49-61 (1993), the entirety of which is herein incorporated by reference), which is currently the default choice for BLAST programs. BLOSUM62 is tailored for alignments of moderately diverged sequences and thus may not yield the best results under all

conditions. Altschul, *J. Mol. Biol. 36:*290-300 (1993), the entirety of which is herein incorporated by reference, describes a combination of three matrices to cover all contingencies. This may improve sensitivity, but at the expense of slower searches. In practice, a single BLOSUM62 matrix is often used but others (PAM40 and PAM250) may be attempted when additional analysis is necessary. Low PAM matrices are directed at detecting very strong but localized sequence similarities, whereas high PAM matrices are directed at detecting long but weak alignments between very distantly related sequences.

Homologues in other organisms are available that can be used for comparative sequence analysis. Multiple alignments are performed to study similarities and differences in a group of related sequences. CLUSTAL W is a multiple sequence alignment package that performs progressive multiple sequence alignments based on the method of Feng and Doolittle, *J. Mol. Evol.* 25:351-360 (1987), the entirety of which is herein incorporated by reference. Each pair of sequences is aligned and the distance between each pair is calculated; from this distance matrix, a guide tree is calculated and all of the sequences are progressively aligned based on this tree. A feature of the program is its sensitivity to the effect of gaps on the alignment; gap penalties are varied to encourage the insertion of gaps in probable loop regions instead of in the middle of structured regions. Users can specify gap penalties, choose between a number of scoring matrices, or supply their own scoring matrix for both pairwise alignments and multiple alignments. CLUSTAL W for UNIX and VMS systems is available at: ftp.ebi.ac.uk. Another program is MACAW (Schuler *et al.*, *Proteins Struct. Func. Genet. 9:*180-190 (1991), the entirety of which is herein incorporated by reference, for which both Macintosh and Microsoft Windows versions are available. MACAW uses a graphical interface, provides a choice of several

alignment algorithms and is available by anonymous ftp at: ncbi.nlm.nih.gov (directory/pub/macaw).

Sequence motifs are derived from multiple alignments and can be used to examine individual sequences or an entire database for subtle patterns. With motifs, it is sometimes possible to detect distant relationships that may not be demonstrable based on comparisons of primary sequences alone. Currently, the largest collection of sequence motifs in the world is PROSITE (Bairoch and Bucher, *Nucleic Acid Research 22:*3583-3589 (1994), the entirety of which is herein incorporated by reference). PROSITE may be accessed via either the ExPASy server on the World Wide Web or anonymous ftp site. Many commercial sequence analysis packages also provide search programs that use PROSITE data.

A resource for searching protein motifs is the BLOCKS E-mail server developed by Henikoff, *Trends Biochem Sci. 18:*267-268 (1993), the entirety of which is herein incorporated by reference; Henikoff and Henikoff, *Nucleic Acid Research 19:*6565-6572 (1991), the entirety of which is herein incorporated by reference; Henikoff and Henikoff, *Proteins 17:*49-61 (1993). BLOCKS searches a protein or nucleotide sequence against a database of protein motifs or "blocks." Blocks are defined as short, ungapped multiple alignments that represent highly conserved protein patterns. The blocks themselves are derived from entries in PROSITE as well as other sources. Either a protein query or a nucleotide query can be submitted to the BLOCKS server; if a nucleotide sequence is submitted, the sequence is translated in all six reading frames and motifs are sought for these conceptual translations. Once the search is completed, the server will return a ranked list of significant matches, along with an alignment of the query sequence to the matched BLOCKS entries.

Conserved protein domains can be represented by two-dimensional matrices, which measure either the frequency or probability of the occurrences of each amino acid residue and deletions or insertions in each position of the domain. This type of model, when used to search against protein databases, is sensitive and usually yields more accurate results than simple motif searches. Two popular implementations of this approach are profile searches such as GCG program ProfileSearch and Hidden Markov Models (HMMs)(Krough *et al., J. Mol. Biol. 235*:1501-1531, (1994); Eddy, *Current Opinion in Structural Biology 6:*361-365, (1996), both of which are herein incorporated by reference in their entirety). In both cases, a large number of common protein domains have been converted into profiles, as present in the PROSITE library, or HHM models, as in the Pfam protein domain library (Sonnhammer *et al., Proteins 28*:405-420 (1997), the entirety of which is herein incorporated by reference). Pfam contains more than 500 HMM models for enzymes, transcription factors, signal transduction molecules and structural proteins. Protein databases can be queried with these profiles or HMM models, which will identify proteins containing the domain of interest. For example, HMMSW or HMMFS, two programs in a public domain package called HMMER (Sonnhammer *et al., Proteins 28*:405-420 (1997)) can be used.

PROSITE and BLOCKS represent collected families of protein motifs. Thus, searching these databases entails submitting a single sequence to determine whether or not that sequence is similar to the members of an established family. Programs working in the opposite direction compare a collection of sequences with individual entries in the protein databases. An example of such a program is the Motif Search Tool, or MoST (Tatusov *et al., Proc. Natl. Acad. Sci. (U.S.A.) 91:*12091-12095 (1994), the entirety of which is herein incorporated by reference). On the basis of an aligned set of input sequences, a weight matrix is calculated by using one of four

methods (selected by the user). A weight matrix is simply a representation, position by position of how likely a particular amino acid will appear. The calculated weight matrix is then used to search the databases. To increase sensitivity, newly found sequences are added to the original data set, the weight matrix is recalculated and the search is performed again. This procedure continues until no new sequences are found.

SUMMARY OF THE INVENTION

The present invention provides a substantially purified nucleic acid molecule that encodes a maize or a soybean enzyme or fragment thereof, wherein the maize or the soybean enzyme is selected from the group consisting of: (a) triose phosphate isomerase; (b) fructose 1,6-bisphosphate aldolase; (c) fructose 1,6-bisphosphate; (d) fructose 6-phosphate 2-kinase; (e) phosphoglucoisomerase; (f) vacuolar H^+ translocating-pyrophosphatase; (g) pyrophosphate-dependent fructose-6-phosphate phosphotransferase; (h) invertase; (i) sucrose synthase; (j) hexokinase; (k) fructokinase; (l) NDP-kinase; (m) glucose-6-phosphate 1-dehydrogenase; (n) phosphoglucomutase and (o) UDP-glucose pyrophophorylase.

The present invention also provides a substantially purified nucleic acid molecule that encodes a plant sucrose pathway enzyme or fragment thereof, wherein the nucleic acid molecule is selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a

maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof.

The present invention also provides a substantially purified maize or soybean enzyme or fragment thereof, wherein the maize or soybean enzyme is selected from the group consisting of (a) triose phosphate isomerase; (b) fructose 1,6-bisphosphate aldolase; (c) fructose 1,6-bisphosphate; (d) fructose 6-phosphate 2-kinase; (e) phosphoglucoisomerase; (f) vacuolar H^+ translocating-pyrophosphatase; (g) pyrophosphate-dependent fructose-6-phosphate phosphotransferase; (h) invertase; (i) sucrose synthase; (j) hexokinase; (k) fructokinase; (l) NDP-kinase; (m) glucose-6-phosphate 1-dehydrogenase; (n) phosphoglucomutase and (o) UDP-glucose pyrophophorylase.

The present invention also provides a substantially purified maize or soybean sucrose pathway protein or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic

acid sequence selected from the group consisting of a complement of SEQ ID NO: 1 through SEQ ID NO: 2814.

The present invention also provides a substantially purified maize or soybean triose phosphate isomerase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1 through SEQ ID NO: 206 and SEQ ID NO: 1538 through SEQ ID NO: 1707.

The present invention also provides a substantially purified maize or soybean triose phosphate isomerase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 206 and SEQ ID NO: 1538 through SEQ ID NO: 1707.

The present invention also provides a substantially purified maize or soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 207 through SEQ ID NO: 232 and SEQ ID NO: 1708 through SEQ ID NO: 2113.

The present invention also provides a substantially purified maize or soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting SEQ ID NO: 207 through SEQ ID NO: 232 and SEQ ID NO: 1708 through SEQ ID NO: 2113.

The present invention also provides a substantially purified maize or soybean fructose 1,6-bisphosphate enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule

having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 233 through SEQ ID NO: 258 and SEQ ID NO: 2114 through SEQ ID NO: 2162.

The present invention also provides a substantially purified maize or soybean fructose 1,6-bisphosphate e enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 233 through SEQ ID NO: 258 and SEQ ID NO: 2114 through SEQ ID NO: 2162.

The present invention also provides a substantially purified maize or soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 259 through SEQ ID NO: 275 and SEQ ID NO: 2163 through SEQ ID NO: 2166.

The present invention also provides a substantially purified maize or soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 259 through SEQ ID NO: 275 and SEQ ID NO: 2163 through SEQ ID NO: 2166.

The present invention also provides a substantially purified maize or soybean phosphoglucoisomerase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 276 through SEQ ID NO: 340 and SEQ ID NO: 2167 through SEQ ID NO: 2182.

The present invention also provides a substantially purified maize or soybean phosphoglucoisomerase enzyme or fragment thereof encoded by a nucleic acid sequence selected

from the group consisting of SEQ ID NO: 276 through SEQ ID NO: 340 and SEQ ID NO: 2167 through SEQ ID NO: 2182.

The present invention also provides a substantially purified maize or soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 341 through SEQ ID NO: 497 and SEQ ID NO: 2183 through SEQ ID NO: 2241.

The present invention also provides a substantially purified maize or soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 341 through SEQ ID NO: 497 and SEQ ID NO: 2183 through SEQ ID NO: 2241.

The present invention also provides a substantially purified maize or soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 498 through SEQ ID NO: 507 and SEQ ID NO: 2442.

The present invention also provides a substantially purified maize or soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 498 through SEQ ID NO: 507 and SEQ ID NO: 2442.

The present invention also provides a substantially purified maize or soybean invertase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 508 through SEQ ID NO: 510 and SEQ ID NO: 2243 through SEQ ID NO: 2254.

The present invention also provides a substantially purified maize or soybean invertase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 508 through SEQ ID NO: 510 and SEQ ID NO: 2243 through SEQ ID NO: 2254.

The present invention also provides a substantially purified maize or soybean sucrose synthase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 511 through SEQ ID NO: 1086 and SEQ ID NO: 2255 through SEQ ID NO: 2590.

The present invention also provides a substantially purified maize or soybean sucrose synthase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 511 through SEQ ID NO: 1086 and SEQ ID NO: 2255 through SEQ ID NO: 2590.

The present invention also provides a substantially purified maize or soybean hexokinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1087 through SEQ ID NO: 1135 and SEQ ID NO: 2591 through SEQ ID NO: 2634.

The present invention also provides a substantially purified maize or soybean hexokinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1087 through SEQ ID NO: 1135 and SEQ ID NO: 2591 through SEQ ID NO: 2634.

The present invention also provides a substantially purified maize or soybean fructokinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1136 through SEQ ID NO: 1215 and SEQ ID NO: 2635 through SEQ ID NO: 2678.

The present invention also provides a substantially purified maize or soybean fructokinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1136 through SEQ ID NO: 1215 and SEQ ID NO: 2635 through SEQ ID NO: 2678.

The present invention also provides a substantially purified maize or soybean NDP-kinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1216 through SEQ ID NO: 1251 and SEQ ID NO: 2679 through SEQ ID NO: 2681.

The present invention also provides a substantially purified maize or soybean NDP-kinase e enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1216 through SEQ ID NO: 1251 and SEQ ID NO: 2679 through SEQ ID NO: 2681.

The present invention also provides a substantially purified maize or soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1252 through SEQ ID NO: 1254 and SEQ ID NO: 2682 through SEQ ID NO: 2689.

The present invention also provides a substantially purified maize or soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1252 through SEQ ID NO: 1254 and SEQ ID NO: 2682 through SEQ ID NO: 2689.

The present invention also provides a substantially purified maize or soybean phosphoglucomutase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1255 through SEQ ID NO: 1360 and SEQ ID NO: 2690 through SEQ ID NO: 2740.

The present invention also provides a substantially purified maize or soybean phosphoglucomutase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1255 through SEQ ID NO: 1360 and SEQ ID NO: 2690 through SEQ ID NO: 2740.

The present invention also provides a substantially purified maize or soybean UDP-glucose pyrophophorylase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of

SEQ ID NO: 1361 through SEQ ID NO: 1537 and SEQ ID NO: 2741 through SEQ ID NO: 2814.

The present invention also provides a substantially purified maize or soybean UDP-glucose pyrophophorylase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1361 through SEQ ID NO: 1537 and SEQ ID NO: 2741 through SEQ ID NO: 2814.

The present invention also provides a purified antibody or fragment thereof which is capable of specifically binding to a maize or soybean enzyme or fragment thereof, wherein the maize or soybean enzyme or fragment thereof is encoded by a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of consisting of SEQ ID NO: 1 through SEQ ID NO: 2814.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean triose phosphate isomerase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1 through SEQ ID NO: 206 and SEQ ID NO: 1538 through SEQ ID NO: 1707 and a maize or soybean triose phosphate isomerase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 206 and SEQ ID NO: 1538 through SEQ ID NO: 1707.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof encoded by a first nucleic acid molecule

which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 207 through SEQ ID NO: 232 and SEQ ID NO: 1708 through SEQ ID NO: 2113 and a maize or soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 207 through SEQ ID NO: 232 and SEQ ID NO: 1708 through SEQ ID NO: 2113.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 233 through SEQ ID NO: 258 and SEQ ID NO: 2114 through SEQ ID NO: 2162 and a maize or soybean fructose 1,6-bisphosphate enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 233 through SEQ ID NO: 258 and SEQ ID NO: 2114 through SEQ ID NO: 2162.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID SEQ ID NO: 259 through SEQ ID NO: 275 and SEQ ID NO: 2163 through SEQ ID NO: 2166 and a maize or soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof encoded by a

nucleic acid sequence selected from the group consisting of SEQ ID NO: 259 through SEQ ID NO: 275 and SEQ ID NO: 2163 through SEQ ID NO: 2166.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 276 through SEQ ID NO: 340 and SEQ ID NO: 2167 through SEQ ID NO: 2182 and a maize or soybean phosphoglucoisomerase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 276 through SEQ ID NO: 340 and SEQ ID NO: 2167 through SEQ ID NO: 2182.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 341 through SEQ ID NO: 497 and SEQ ID NO: 2183 through SEQ ID NO: 2241 and a maize or soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 341 through SEQ ID NO: 497 and SEQ ID NO: 2183 through SEQ ID NO: 2241.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof

encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 498 through SEQ ID NO: 507 and SEQ ID NO: 2442 and a maize or soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 498 through SEQ ID NO: 507 and SEQ ID NO: 2442.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean invertase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 508 through SEQ ID NO: 510 and SEQ ID NO: 2243 through SEQ ID NO: 2254 and a maize or soybean invertase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 508 through SEQ ID NO: 510 and SEQ ID NO: 2243 through SEQ ID NO: 2254.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean sucrose synthase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 511 through SEQ ID NO: 1086 and SEQ ID NO: 2255 through SEQ ID NO: 2590 and a maize or soybean sucrose synthase enzyme or fragment thereof encoded by a nucleic acid sequence selected from

the group consisting of SEQ ID NO: 511 through SEQ ID NO: 1086 and SEQ ID NO: 2255 through SEQ ID NO: 2590.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean hexokinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1087 through SEQ ID NO: 1135 and SEQ ID NO: 2591 through SEQ ID NO: 2634 and a maize or soybean hexokinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1087 through SEQ ID NO: 1135 and SEQ ID NO: 2591 through SEQ ID NO: 2634.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean fructokinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1136 through SEQ ID NO: 1215 and SEQ ID NO: 2635 through SEQ ID NO: 2678 and a maize or soybean fructokinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1136 through SEQ ID NO: 1215 and SEQ ID NO: 2635 through SEQ ID NO: 2678.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean NDP-kinase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically

hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1216 through SEQ ID NO: 1251 and SEQ ID NO: 2679 through SEQ ID NO: 2681 and a maize or soybean NDP-kinase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1216 through SEQ ID NO: 1251 and SEQ ID NO: 2679 through SEQ ID NO: 2681.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1252 through SEQ ID NO: 1254 and SEQ ID NO: 2682 through SEQ ID NO: 2689 and a maize or soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1252 through SEQ ID NO: 1254 and SEQ ID NO: 2682 through SEQ ID NO: 2689.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean phosphoglucomutase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1255 through SEQ ID NO: 1360 and SEQ ID NO: 2690 through SEQ ID NO: 2740 and a maize or soybean phosphoglucomutase enzyme or fragment thereof encoded by a nucleic acid

sequence selected from the group consisting of SEQ ID NO: 1255 through SEQ ID NO: 1360 and SEQ ID NO: 2690 through SEQ ID NO: 2740.

The present invention also provides a substantially purified antibody or fragment thereof, the antibody or fragment thereof capable of specifically binding to a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a complement of SEQ ID NO: 1361 through SEQ ID NO: 1537 and SEQ ID NO: 2741 through SEQ ID NO: 2814 and a maize or soybean UDP-glucose pyrophophorylase enzyme or fragment thereof encoded by a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1361 through SEQ ID NO: 1537 and SEQ ID NO: 2741 through SEQ ID NO: 2814.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; (B) a structural nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of (a) a nucleic acid sequence which encodes for triose phosphate isomerase or fragment thereof; (b) a nucleic acid sequence which encodes for fructose 1,6-bisphosphate aldolase or fragment thereof; (c) a nucleic acid sequence which encodes for fructose 1,6-bisphosphate or fragment thereof; (d) a nucleic acid sequence which encodes for fructose 6-phosphate 2-kinase or fragment thereof; (e) a nucleic acid sequence which encodes for phosphoglucoisomerase or fragment thereof; (f) a nucleic acid sequence which encodes for vacuolar H^+ translocating-pyrophosphatase or fragment thereof; (g) a nucleic acid sequence which encodes for pyrophosphate-dependent fructose-6-phosphate phosphotransferase or fragment thereof; (h) a nucleic acid sequence which encodes for invertase or fragment thereof;

(i) a nucleic acid sequence which encodes for sucrose synthase or fragment thereof; (j) a nucleic acid sequence which encodes for hexokinase or fragment thereof; (k) a nucleic acid sequence which encodes for fructokinase or fragment thereof; (l) a nucleic acid sequence which encodes for NDP-kinase or fragment thereof; (m) a nucleic acid sequence which encodes for glucose-6-phosphate 1-dehydrogenase or fragment thereof; (n) a nucleic acid sequence which encodes for phosphoglucomutase or fragment thereof (o) a nucleic acid sequence which encodes for UDP-glucose pyrophophorylase or fragment thereof and (p) a nucleic acid sequence which is complementary to any of the nucleic acid sequences of (a) through (o); and (C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule encodes a plant sucrose pathway enzyme or fragment thereof, the structural nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof; which is linked to (C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule is selected from the group consisting of a nucleic

acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof; which is linked to (C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the

production of a mRNA molecule; which is linked to (B) a transcribed nucleic acid molecule with a transcribed strand and a non-transcribed strand, wherein the transcribed strand is complementary to a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof; which is linked to (C) a 3' non-translated sequence that functions in plant cells to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a transformed plant having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule; which is linked to: (B) a transcribed nucleic acid molecule with a transcribed strand and a non-transcribed strand, wherein a transcribed mRNA of the transcribed strand is complementary to an endogenous mRNA molecule having a nucleic acid sequence selected from the group consisting of an endogenous mRNA molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean invertase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a

soybean sucrose synthase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructokinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and an endogenous mRNA molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof; which is linked to (C) a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of the mRNA molecule.

The present invention also provides a method for determining a level or pattern in a plant cell of an enzyme in a plant metabolic pathway comprising: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule selected from the group of marker nucleic acid molecules which specifically hybridize to a nucleic acid molecule having the nucleic acid sequence of SEQ ID NO: 1 through SEQ ID NO: 2814 or compliments thereof, with a complementary nucleic acid molecule obtained from the plant cell or plant tissue, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue permits the detection of an mRNA for the enzyme; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue; and (C) detecting the level or pattern of the complementary nucleic

acid, wherein the detection of the complementary nucleic acid is predictive of the level or pattern of the enzyme in the plant metabolic pathway.

The present invention also provides a method for determining a level or pattern of a plant sucrose pathway enzyme in a plant cell or plant tissue comprising: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragment of either, with a complementary nucleic acid molecule obtained from the plant cell or plant tissue, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue permits the detection of the plant sucrose pathway enzyme; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue; and (C) detecting the level or pattern of the complementary nucleic acid, wherein the detection of the complementary nucleic acid is predictive of the level or pattern of the plant sucrose pathway enzyme.

The present invention also provides a method for determining a level or pattern of a plant sucrose pathway enzyme in a plant cell or plant tissue comprising: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule comprising a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or complement thereof or fragment of either, a

nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or complement thereof or fragment of either f, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof or fragment of either, with a complementary nucleic acid molecule obtained from the plant cell or plant tissue, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue permits the detection of the plant sucrose pathway enzyme; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant

tissue; and (C) detecting the level or pattern of the complementary nucleic acid, wherein the detection of the complementary nucleic acid is predictive of the level or pattern of the plant sucrose pathway enzyme.

The present invention also provides a method for determining a level or pattern of a plant sucrose pathway enzyme in a plant cell or plant tissue under evaluation which comprises assaying the concentration of a molecule, whose concentration is dependent upon the expression of a gene, the gene specifically hybridizes to a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof, in comparison to the concentration of that molecule present in a reference plant cell or a reference plant tissue with a known level or pattern of the plant sucrose pathway enzyme, wherein the assayed concentration of the molecule is compared to the assayed concentration of the molecule in the reference plant cell or reference plant tissue with the known level or pattern of the plant sucrose pathway enzyme.

The present invention also provides a method for determining a level or pattern of a plant sucrose pathway enzyme in a plant cell or plant tissue under evaluation which comprises assaying the concentration of a molecule, whose concentration is dependent upon the expression of a gene, the gene specifically hybridizes to a nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean

phosphoglucoisomerase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or complement thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof, in comparison to the concentration of that molecule present in a reference plant cell or a reference plant tissue with a known level or pattern of the plant sucrose pathway enzyme, wherein the assayed concentration of the molecule is compared to the assayed concentration of the molecule in the reference plant cell or the reference plant tissue with the known level or pattern of the plant sucrose pathway enzyme.

The present invention provides a method of determining a mutation in a plant whose presence is predictive of a mutation affecting a level or pattern of a protein comprising the steps: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid, the marker nucleic acid selected from the group of marker nucleic acid molecules which specifically hybridize to a nucleic acid molecule having a nucleic acid sequence selected from the group of

SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof and a complementary nucleic acid molecule obtained from the plant, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting the level or pattern of the plant sucrose pathway enzyme in the plant; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant; and (C) detecting the presence of the polymorphism, wherein the detection of the polymorphism is predictive of the mutation.

The present invention also provides a method for determining a mutation in a plant whose presence is predictive of a mutation affecting the level or pattern of a plant sucrose pathway enzyme comprising the steps: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule comprising a nucleic acid molecule that is linked to a gene, the gene specifically hybridizes to a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof and a complementary nucleic acid molecule obtained from the plant, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting the level or pattern of the plant sucrose pathway enzyme in the plant; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant; and (C) detecting the presence of the polymorphism, wherein the detection of the polymorphism is predictive of the mutation.

The present invention also provides a method for determining a mutation in a plant whose presence is predictive of a mutation affecting the level or pattern of a plant sucrose pathway enzyme comprising the steps: (A) incubating, under conditions permitting nucleic acid hybridization, a marker nucleic acid molecule, the marker nucleic acid molecule comprising a nucleic acid molecule that is linked to a gene, the gene specifically hybridizes to a nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or

complement thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof and a complementary nucleic acid molecule obtained from the plant, wherein nucleic acid hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant permits the detection of a polymorphism whose presence is predictive of a mutation affecting the level or pattern of the plant sucrose pathway enzyme in the plant; (B) permitting hybridization between the marker nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant; and (C) detecting the presence of the polymorphism, wherein the detection of the polymorphism is predictive of the mutation.

The present invention also provides a method of producing a plant containing an overexpressed protein comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region has a nucleic acid sequence selected from group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in overexpression of the protein; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing an overexpressed plant sucrose enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule having a nucleic acid sequence selected from the group

consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof; wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in overexpression of the plant sucrose pathway enzyme; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing an overexpressed plant sucrose pathway enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a

soybean fructokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof, wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in overexpression of the plant sucrose pathway enzyme protein; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing reduced levels of a plant sucrose pathway enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814; wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and wherein the functional nucleic acid molecule results in co-suppression of the plant sucrose pathway enzyme protein; and (B) growing the transformed plant.

The present invention also provides a method of producing a plant containing reduced levels of a plant sucrose pathway enzyme comprising: (A) transforming the plant with a functional nucleic acid molecule, wherein the functional nucleic acid molecule comprises a

promoter region, wherein the promoter region is linked to a structural region, wherein the structural region comprises a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof, wherein the structural region is linked to a 3' non-translated sequence that functions in the plant to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a

mRNA molecule; and wherein the functional nucleic acid molecule results in co-suppression of the plant sucrose pathway enzyme; and (B) growing the transformed plant.

The present invention also provides a method for reducing expression of a plant sucrose pathway enzyme in a plant comprising: (A) transforming the plant with a nucleic acid molecule, the nucleic acid molecule having an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule, wherein the exogenous promoter region is linked to a transcribed nucleic acid molecule having a transcribed strand and a non-transcribed strand, wherein the transcribed strand is complementary to a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragments of either and the transcribed strand is complementary to an endogenous mRNA molecule; and wherein the transcribed nucleic acid molecule is linked to a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and (B) growing the transformed plant.

The present invention also provides a method for reducing expression of a plant sucrose pathway enzyme in a plant comprising: (A) transforming the plant with a nucleic acid molecule, the nucleic acid molecule having an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule, wherein the exogenous promoter region is linked to a transcribed nucleic acid molecule having a transcribed strand and a non-transcribed strand, wherein a transcribed mRNA of the transcribed strand is complementary to a nucleic acid molecule selected from the group consisting of an endogenous mRNA molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme

or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean invertase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean sucrose synthase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean fructokinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, an endogenous mRNA molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and an endogenous mRNA molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof, and wherein the transcribed nucleic acid molecule is linked to a 3' non-translated sequence that functions in the plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of a mRNA molecule; and (B) growing the transformed plant.

The present invention also provides a method of determining an association between a polymorphism and a plant trait comprising: (A) hybridizing a nucleic acid molecule specific for

the polymorphism to genetic material of a plant, wherein the nucleic acid molecule has a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragment of either; and (B) calculating the degree of association between the polymorphism and the plant trait.

The present invention also provides a method of determining an association between a polymorphism and a plant trait comprising: (A) hybridizing a nucleic acid molecule specific for the polymorphism to genetic material of a plant, wherein the nucleic acid molecule is selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a

soybean fructokinase enzyme or complement thereof or fragment of either f, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof or fragment of either and (B) calculating the degree of association between the polymorphism and the plant trait.

The present invention also provides a method of isolating a nucleic acid that encodes a plant sucrose pathway enzyme or fragment thereof comprising: (A) incubating under conditions permitting nucleic acid hybridization, a first nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragment of either with a complementary second nucleic acid molecule obtained from a plant cell or plant tissue; (B) permitting hybridization between the first nucleic acid molecule and the second nucleic acid molecule obtained from the plant cell or plant tissue; and (C) isolating the second nucleic acid molecule.

The present invention also provides a method of isolating a nucleic acid molecule that encodes a plant sucrose pathway enzyme or fragment thereof comprising: (A) incubating under conditions permitting nucleic acid hybridization, a first nucleic acid molecule selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-

bisphosphate enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or complement thereof or fragment of either f, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof or fragment of either, with a complementary second nucleic acid molecule obtained from a plant cell or plant tissue; (B) permitting hybridization between the plant sucrose pathway nucleic acid molecule and the complementary nucleic acid molecule obtained from the plant cell or plant tissue; and (C) isolating the second nucleic acid molecule.

DETAILED DESCRIPTION OF THE INVENTION

Definitions and Agents of the Present Invention

Definitions:

As used herein, a sucrose pathway enzyme is any enzyme that is associated with the synthesis or degradation of sucrose.

As used herein, a sucrose synthesis enzyme is any enzyme that is associated with the synthesis of sucrose.

As used herein, a sucrose degradation enzyme is any enzyme that is associated with the degradation of sucrose.

As used herein, triose phosphate isomerase is any enzyme that maintains at equilibrium the pool of triose phosphates, dihydroxyacetone phosphate ("DHAP"), and glyceraldehyde-3-phosphate ("GAP") within the cytoplasm.

As used herein, fructose 1,6-bisphosphate aldolase is any enzyme that catalyzes an aldol condensation of DHAP and GAP to form fructose 1,6-bisphosphate ("F1,6BP").

As used herein, fructose-1,6-bisphosphatase ("FBPase") is any enzyme that catalyzes the cleavage of phosphate from the C1 carbon of fructose-1,6-bisphosphate to form fructose-6-phosphate ("F6P").

As used herein, fructose 6-phosphate 2-kinase is any enzyme that controlls the concentration of fructose 2,6-bisphosphate.

As used herein, phosphoglucoisomerase is any enzyme that maintains glucose-6-phosphate ("G6P") and glucose-1-phosphate ("G1P") in equilibrium with the F6P pool.

As used herein, vacuolar H^+ translocating-pyrophosphatase is any enzyme that utilizes pyrophosphate to sustain a proton gradient formed within the vacuolar membrane.

As used herein, pyrophosphate-dependent fructose-6-phosphate phosphotransferase is any enzyme that catalyzes the reversible production of F1,6BP and Pi from F6P and PPi.

As used herein, invertase is any enzyme that irreversibly cleaves sucrose into glucose and fructose.

As used herein, sucrose synthase is any enzyme that carries out the kinetically reversible transglycosylation of sucrose and UDP into fructose and UDPG.

As used herein, hexokinase is any enzyme that can phosphorylate either glucose or fructose.

As used herein, fructokinase is any enzyme that typically has a specific affinity for fructose.

As used herein, NDP-kinase is any enzyme that can maintain UDP levels for sucrose synthase reactions, even in the case of an ATP-specific fructokinase.

As used herein, glucose-6-phosphate 1-dehydrogenase is any enzyme that allows G6P resulting from hexose kinase activity to enter the pentose phosphate pathway.

As used herein, UDP-glucose dehydrogenase is any enzyme that allows UDPG formed by sucrose synthase to be utilized directly for cellulose or callose biosynthesis.

As used herein, phosphoglucomutase is any enzyme that is ubiquitous and reversible with commitments of G6P to either F6P or G1P resulting from fluxes in metabolites further along each pathway.

Agents

(a) Nucleic Acid Molecules

Agents of the present invention include plant nucleic acid molecules and more preferably include maize and soybean nucleic acid molecules and more preferably include nucleic acid

molecules of the maize genotypes B73 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), B73 x Mo17 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), DK604 (Dekalb Genetics, Dekalb, Illinois U.S.A.), H99 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), RX601 (Asgrow Seed Company, Des Moines, Iowa), Mo17 (Illinois Foundation Seeds, Champaign, Illinois U.S.A.), and soybean types Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa), C1944 (United States Department of Agriculture (USDA) Soybean Germplasm Collection, Urbana, Illinois U.S.A.), Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), FT108 (Monsoy, Brazil), Hartwig (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), BW211S Null (Tohoku University, Morioka, Japan), PI507354 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), Asgrow A4922 (Asgrow Seed Company, Des Moines, Iowa U.S.A.), PI227687 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.), PI229358 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and Asgrow A3237 (Asgrow Seed Company, Des Moines, Iowa U.S.A.).

A subset of the nucleic acid molecules of the present invention includes nucleic acid molecules that are marker molecules. Another subset of the nucleic acid molecules of the present invention include nucleic acid molecules that encode a protein or fragment thereof. Another subset of the nucleic acid molecules of the present invention are EST molecules.

Fragment nucleic acid molecules may encode significant portion(s) of, or indeed most of, these nucleic acid molecules. Alternatively, the fragments may comprise smaller oligonucleotides (having from about 15 to about 250 nucleotide residues and more preferably, about 15 to about 30 nucleotide residues).

As used herein, an agent, be it a naturally occurring molecule or otherwise may be "substantially purified," if desired, such that one or more molecules that is or may be present in a

naturally occurring preparation containing that molecule will have been removed or will be present at a lower concentration than that at which it would normally be found.

The agents of the present invention will preferably be "biologically active" with respect to either a structural attribute, such as the capacity of a nucleic acid to hybridize to another nucleic acid molecule, or the ability of a protein to be bound by an antibody (or to compete with another molecule for such binding). Alternatively, such an attribute may be catalytic and thus involve the capacity of the agent to mediate a chemical reaction or response.

The agents of the present invention may also be recombinant. As used herein, the term recombinant means any agent (e.g. DNA, peptide etc.), that is, or results, however indirect, from human manipulation of a nucleic acid molecule.

It is understood that the agents of the present invention may be labeled with reagents that facilitate detection of the agent (e.g. fluorescent labels, Prober *et al., Science 238*:336-340 (1987); Albarella *et al.,* EP 144914; chemical labels, Sheldon *et al.,* U.S. Patent 4,582,789; Albarella *et al.,* U.S. Patent 4,563,417; modified bases, Miyoshi *et al.,* EP 119448, all of which are hereby incorporated by reference in their entirety).

It is further understood, that the present invention provides recombinant bacterial, mammalian, microbial, insect, fungal and plant cells and viral constructs comprising the agents of the present invention (See, for example, Uses of the Agents of the Invention, Section (a) Plant Constructs and Plant Transformants; Section (b) Fungal Constructs and Fungal Transformants; Section (c) Mammalian Constructs and Transformed Mammalian Cells; Section (d) Insect Constructs and Transformed Insect Cells; and Section (e) Bacterial Constructs and Transformed Bacterial Cells).

Nucleic acid molecules or fragments thereof of the present invention are capable of specifically hybridizing to other nucleic acid molecules under certain circumstances. As used herein, two nucleic acid molecules are said to be capable of specifically hybridizing to one another if the two molecules are capable of forming an anti-parallel, double-stranded nucleic acid structure. A nucleic acid molecule is said to be the "complement" of another nucleic acid molecule if they exhibit complete complementarity. As used herein, molecules are said to exhibit "complete complementarity" when every nucleotide of one of the molecules is complementary to a nucleotide of the other. Two molecules are said to be "minimally complementary" if they can hybridize to one another with sufficient stability to permit them to remain annealed to one another under at least conventional "low-stringency" conditions. Similarly, the molecules are said to be "complementary" if they can hybridize to one another with sufficient stability to permit them to remain annealed to one another under conventional "high-stringency" conditions. Conventional stringency conditions are described by Sambrook *et al.*, *Molecular Cloning,* A Laboratory Manual, 2nd Ed., Cold Spring Harbor Press, Cold Spring Harbor, New York (1989) and by Haymes *et al., Nucleic Acid Hybridization, A Practical Approach*, IRL Press, Washington, DC (1985), the entirety of which is herein incorporated by reference. Departures from complete complementarity are therefore permissible, as long as such departures do not completely preclude the capacity of the molecules to form a double-stranded structure. Thus, in order for a nucleic acid molecule to serve as a primer or probe it need only be sufficiently complementary in sequence to be able to form a stable double-stranded structure under the particular solvent and salt concentrations employed.

Appropriate stringency conditions which promote DNA hybridization, for example, 6.0 X sodium chloride/sodium citrate (SSC) at about 45°C, followed by a wash of 2.0 X SSC at 50°C,

are known to those skilled in the art or can be found in *Current Protocols in Molecular Biology*, John Wiley & Sons, N.Y. (1989), 6.3.1-6.3.6. For example, the salt concentration in the wash step can be selected from a low stringency of about 2.0 X SSC at 50°C to a high stringency of about 0.2 X SSC at 50°C. In addition, the temperature in the wash step can be increased from low stringency conditions at room temperature, about 22°C, to high stringency conditions at about 65°C. Both temperature and salt may be varied, or either the temperature or the salt concentration may be held constant while the other variable is changed.

In a preferred embodiment, a nucleic acid of the present invention will specifically hybridize to one or more of the nucleic acid molecules set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof under moderately stringent conditions, for example at about 2.0 X SSC and about 65°C.

In a particularly preferred embodiment, a nucleic acid of the present invention will include those nucleic acid molecules that specifically hybridize to one or more of the nucleic acid molecules set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof under high stringency conditions such as 0.2 X SSC and about 65°C.

In one aspect of the present invention, the nucleic acid molecules of the present invention have one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof. In another aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 90% sequence identity with one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof. In a further aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 95% sequence identity with one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO:

2814 or complements thereof. In a more preferred aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 98% sequence identity with one or more of the nucleic acid sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof. In an even more preferred aspect of the present invention, one or more of the nucleic acid molecules of the present invention share between 100% and 99% sequence identity with one or more of the sequences set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof.

In a further more preferred aspect of the present invention, one or more of the nucleic acid molecules of the present invention exhibit 100% sequence identity with a nucleic acid molecule present within MONN01, SATMON001 through SATMON031, SATMON033, SATMON034, SATMON~001, SATMONN01, SATMONN04 through SATMONN006, CMz029 through CMz031, CMz033, CMz035 through CMz037, CMz039 through CMz042, CMz044 through CMz045, CMz047 through CMz050, SOYMON001 through SOYMON038, Soy51 through Soy56, Soy58 through Soy62, Soy65 through Soy66, Soy 68 through Soy73 and Soy76 through Soy77, Lib9, Lib22 through Lib25, Lib35, Lib80 through Lib81, Lib 144, Lib146, Lib147, Lib190, Lib3032 through Lib3036 and Lib3099 (Monsanto Company, St. Loius, Missouri U.S.A.).

(i) Nucleic Acid Molecules Encoding Proteins or Fragments Thereof

Nucleic acid molecules of the present invention can comprise sequences that encode a sucrose pathway protein or fragment thereof. Such proteins or fragments thereof include homologues of known proteins in other organisms.

In a preferred embodiment of the present invention, a maize or a soybean protein or fragment thereof of the present invention is a homologue of another plant protein. In another

preferred embodiment of the present invention, a maize or a soybean protein or fragment thereof of the present invention is a homologue of a fungal protein. In another preferred embodiment of the present invention, a maize or a soybean protein of the present invention is a homologue of mammalian protein. In another preferred embodiment of the present invention, a maize or a soybean protein or fragment thereof of the present invention is a homologue of a bacterial protein. In another preferred embodiment of the present invention, a soybean protein or fragment thereof of the present invention is a homologue of a maize protein. In another preferred embodiment of the present invention, a maize protein homologue or fragment thereof of the present invention is a homologue of a soybean protein.

In a preferred embodiment of the present invention, the nucleic molecule of the present invention encodes a maize or a soybean protein or fragment thereof where a maize or a soybean protein exhibits a BLAST probability score of greater than 1E-12, preferably a BLAST probability score of between about 1E-30 and about 1E-12, even more preferably a BLAST probability score of greater than 1E-30 with its homologue.

In another preferred embodiment of the present invention, the nucleic acid molecule encoding a maize or a soybean protein or fragment thereof exhibits a % identity with its homologue of between about 25% and about 40%, more preferably of between about 40 and about 70%, even more preferably of between about 70% and about 90% and even more preferably between about 90% and 99%. In another preferred embodiment, of the present invention, a maize or a soybean protein or fragments thereof exhibits a % identity with its homologue of 100%.

In a preferred embodiment of the present invention, the nucleic molecule of the present invention encodes a maize or a soybean protein or fragment thereof where a maize or a soybean

protein exhibits a BLAST score of greater than 120, preferably a BLAST score of between about 1450 and about 120, even more preferably a BLAST score of greater than 1450 with its homologue.

Nucleic acid molecules of the present invention also include non-maize, non-soybean homologues. Preferred non-maize and soybean homologues are selected from the group consisting of alfalfa, *Arabidopsis,* barley, *Brassica*, broccoli, cabbage, citrus, cotton, garlic, oat, oilseed rape, onion, canola, flax, an ornamental plant, pea, peanut, pepper, potato, rice, rye, sorghum, strawberry, sugarcane, sugarbeet, tomato, wheat, poplar, pine, fir, eucalyptus, apple, lettuce, lentils, grape, banana, tea, turf grasses, sunflower, oil palm and *Phaseolus*.

In a preferred embodiment, nucleic acid molecules having SEQ ID NO: 1 through SEQ ID NO: 2814 or complements and fragments of either can be utilized to obtain such homologues.

The degeneracy of the genetic code, which allows different nucleic acid sequences to code for the same protein or peptide, is known in the literature. (U.S. Patent No. 4,757,006, the entirety of which is herein incorporated by reference).

In an aspect of the present invention, one or more of the nucleic acid molecules of the present invention differ in nucleic acid sequence from those encoding a maize or a soybean protein or fragment thereof in SEQ ID NO: 1 through SEQ ID NO: 2814 due to the degeneracy in the genetic code in that they encode the same protein but differ in nucleic acid sequence.

In another further aspect of the present invention, one or more of the nucleic acid molecules of the present invention differ in nucleic acid sequence from those encoding a maize or a soybean protein or fragment thereof in SEQ ID NO: 1 through SEQ ID NO: 2814 due to fact that the different nucleic acid sequence encodes a protein having one or more conservative amino acid residue. Examples of conservative substitutions are set forth in Table 1. It is

understood that codons capable of coding for such conservative substitutions are known in the art.

Table 1

Original Residue	Conservative Substitutions
Ala	Ser
Arg	Lys
Asn	Gln; His
Asp	Glu
Cys	Ser; Ala
Gln	Asn
Glu	Asp
Gly	Pro
His	Asn; Gln
Ile	Leu; Val
Leu	Ile; Val
Lys	Arg; Gln; Glu
Met	Leu; Ile
Phe	Met; Leu; Tyr
Ser	Thr
Thr	Ser
Trp	Tyr
Tyr	Trp; Phe

Val	Ile; Leu

In a further aspect of the present invention, one or more of the nucleic acid molecules of the present invention differ in nucleic acid sequence from those encoding a maize or a soybean protein or fragment thereof set forth in SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof due to the fact that one or more codons encoding an amino acid has been substituted for a codon that encodes a nonessential substitution of the amino acid originally encoded.

Agents of the present invention include nucleic acid molecules that encode a maize or a soybean sucrose pathway protein or fragment thereof and particularly substantially purified nucleic acid molecules selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean invertase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase protein or fragment

thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase protein or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase protein or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase protein or fragment thereof.

Non-limiting examples of such nucleic acid molecules of the present invention are nucleic acid molecules comprising: SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof that encode for a sucrose pathway protein or fragment thereof, SEQ ID NO: 1 through SEQ ID NO: 206 and SEQ ID NO: 1538 through SEQ ID NO: 1707 or fragment thereof that encode for a triose phosphate isomerase protein or fragment thereof, SEQ ID NO: 207 through SEQ ID NO: 232 and SEQ ID NO: 1708 through SEQ ID NO: 2113 or fragment thereof that encode for a fructose 1,6-bisphosphate aldolase protein or fragment thereof, SEQ ID NO: 233 through SEQ ID NO: 258 and SEQ ID NO: 2114 through SEQ ID NO: 2162 or fragment thereof that encode for a fructose 1,6-bisphosphate protein or fragment thereof, SEQ ID NO: 259 through SEQ ID NO: 275 and SEQ ID NO: 2163 through SEQ ID NO: 2166 or fragment thereof that encode for a fructose 6-phosphate 2-kinase protein or fragment thereof, SEQ ID NO: 276 through SEQ ID NO: 340 and SEQ ID NO: 2167 through SEQ ID NO: 2182 or fragment thereof that encode for a phosphoglucoisomerase protein or fragment thereof, SEQ ID NO: 341 through SEQ ID NO: 497 and SEQ ID NO: 2183 through SEQ ID NO: 2241 or fragment thereof that encode for a vacuolar H^+ translocating-pyrophosphatase protein or fragment thereof, SEQ ID NO: 498 through SEQ ID NO: 507 and SEQ ID NO: 2442 or fragment thereof that encode for a pyrophosphate-dependent fructose-6-phosphate phosphotransferase protein or fragment thereof, SEQ ID NO: 508 through SEQ ID NO: 510 and SEQ ID NO: 2243 through SEQ ID NO: 2254 or

fragment thereof that encode for an invertase protein or fragment thereof, SEQ ID NO: 511 through SEQ ID NO: 1086 and SEQ ID NO: 2255 through SEQ ID NO: 2590 or fragment thereof that encode for a sucrose synthase protein or fragment thereof, SEQ ID NO: 1087 through SEQ ID NO: 1135 and SEQ ID NO: 2591 through SEQ ID NO: 2634 or fragment thereof that encode for a hexokinase protein or fragment thereof, SEQ ID NO: 1136 through SEQ ID NO: 1215 and SEQ ID NO: 2635 through SEQ ID NO: 2678 or fragment thereof that encode for a fructokinase protein or fragment thereof, SEQ ID NO: 1216 through SEQ ID NO: 1251 and SEQ ID NO: 2679 through SEQ ID NO: 2681 or fragment thereof that encode for a NDP-kinase protein or fragment thereof, SEQ ID NO: 1252 through SEQ ID NO: 1254 and SEQ ID NO: 2682 through SEQ ID NO: 2689 or fragment thereof that encode for a glucose-6-phosphate 1-dehydrogenase protein or fragment thereof, SEQ ID NO: 1255 through SEQ ID NO: 1360 and SEQ ID NO: 2690 through SEQ ID NO: 2740 or fragment thereof that encode for a phosphoglucomutase protein or fragment thereof and SEQ ID NO: 1361 through SEQ ID NO: 1537 and SEQ ID NO: 2741 through SEQ ID NO: 2814 or fragment thereof that encode for an UDP-glucose pyrophophorylase protein or fragment thereof.

A nucleic acid molecule of the present invention can also encode a homologue of a maize or a soybean triose phosphate isomerase or fragment thereof, a maize or a soybean fructose 1,6-bisphosphate aldolase or fragment thereof, a maize or a soybean fructose 1,6-bisphosphate or fragment thereof, a maize or a soybean fructose 6-phosphate 2-kinase or fragment thereof, a maize or a soybean phosphoglucoisomerase or fragment thereof, a maize or a soybean vacuolar H^+ translocating-pyrophosphatase or fragment thereof, a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase or fragment thereof, a maize or a soybean invertase or fragment thereof, a maize or a soybean sucrose synthase or fragment thereof, a maize

or a soybean hexokinase or fragment thereof, a maize or a soybean fructokinase or fragment thereof, a maize or a soybean NDP-kinase or fragment thereof, a maize or a soybean glucose-6-phosphate 1-dehydrogenase or fragment thereof, a maize or a soybean phosphoglucomutase or fragment thereof and a maize or a soybean UDP-glucose pyrophophorylase or fragment thereof. As used herein a homologue protein molecule or fragment thereof is a counterpart protein molecule or fragment thereof in a second species (*e.g.*, maize triose phosphate isomerase protein is a homologue of soybean triose phosphate isomerase protein).

(ii) Nucleic Acid Molecule Markers and Probes

One aspect of the present invention concerns markers that include nucleic acid molecules SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragments of either that can act as markers or other nucleic acid molecules of the present invention that can act as markers.. Genetic markers of the present invention include "dominant" or "codominant" markers "Codominant markers" reveal the presence of two or more alleles (two per diploid individual) at a locus. "Dominant markers" reveal the presence of only a single allele per locus. The presence of the dominant marker phenotype (e.g., a band of DNA) is an indication that one allele is present in either the homozygous or heterozygous condition. The absence of the dominant marker phenotype (e.g. absence of a DNA band) is merely evidence that "some other" undefined allele is present. In the case of populations where individuals are predominantly homozygous and loci are predominately dimorphic, dominant and codominant markers can be equally valuable. As populations become more heterozygous and multi-allelic, codominant markers often become more informative of the genotype than dominant markers. Marker molecules can be, for example, capable of detecting polymorphisms such as single nucleotide polymorphisms (SNPs).

SNPs are single base changes in genomic DNA sequence. They occur at greater frequency and are spaced with a greater uniformly throughout a genome than other reported forms of polymorphism. The greater frequency and uniformity of SNPs means that there is greater probability that such a polymorphism will be found near or in a genetic locus of interest than would be the case for other polymorphisms. SNPs are located in protein-coding regions and noncoding regions of a genome. Some of these SNPs may result in defective or variant protein expression (e.g., as a result of mutations or defective splicing). Analysis (genotyping) of characterized SNPs can require only a plus/minus assay rather than a lengthy measurement, permitting easier automation.

SNPs can be characterized using any of a variety of methods. Such methods include the direct or indirect sequencing of the site, the use of restriction enzymes (Botstein *et al.*, *Am. J. Hum. Genet. 32*:314-331 (1980), the entirety of which is herein incorporated reference; Konieczny and Ausubel, *Plant J. 4*:403-410 (1993), the entirety of which is herein incorporated by reference), enzymatic and chemical mismatch assays (Myers *et al.*, *Nature 313*:495-498 (1985), the entirety of which is herein incorporated by reference), allele-specific PCR (Newton *et al.*, *Nucl. Acids Res. 17*:2503-2516 (1989), the entirety of which is herein incorporated by reference; Wu *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:2757-2760 (1989), the entirety of which is herein incorporated by reference), ligase chain reaction (Barany, *Proc. Natl. Acad. Sci. (U.S.A.) 88*:189-193 (1991), the entirety of which is herein incorporated by reference), single-strand conformation polymorphism analysis (Labrune *et al.*, *Am. J. Hum. Genet. 48*: 1115-1120 (1991), the entirety of which is herein incorporated by reference), primer-directed nucleotide incorporation assays (Kuppuswami *et al.*, *Proc. Natl. Acad. Sci. USA 88*:1143-1147 (1991), the entirety of which is herein incorporated by reference), dideoxy fingerprinting (Sarkar *et al.*,

Genomics 13:441-443 (1992), the entirety of which is herein incorporated by reference), solid-phase ELISA-based oligonucleotide ligation assays (Nikiforov *et al.*, *Nucl. Acids Res. 22*:4167-4175 (1994), the entirety of which is herein incorporated by reference), oligonucleotide fluorescence-quenching assays (Livak *et al.*, *PCR Methods Appl. 4*:357-362 (1995), the entirety of which is herein incorporated by reference), 5'-nuclease allele-specific hybridization TaqMan assay (Livak *et al.*, *Nature Genet. 9*:341-342 (1995), the entirety of which is herein incorporated by reference), template-directed dye-terminator incorporation (TDI) assay (Chen and Kwok, *Nucl. Acids Res. 25*:347-353 (1997), the entirety of which is herein incorporated by reference), allele-specific molecular beacon assay (Tyagi *et al.*, *Nature Biotech. 16*: 49-53 (1998), the entirety of which is herein incorporated by reference), PinPoint assay (Haff and Smirnov, *Genome Res. 7*: 378-388 (1997), the entirety of which is herein incorporated by reference) and dCAPS analysis (Neff *et al.*, *Plant J. 14*:387-392 (1998), the entirety of which is herein incorporated by reference).

Additional markers, such as AFLP markers, RFLP markers and RAPD markers, can be utilized (Walton, *Seed World* 22-29 (July, 1993), the entirety of which is herein incorporated by reference; Burow and Blake, *Molecular Dissection of Complex Traits*, 13-29, Paterson (ed.), CRC Press, New York (1988), the entirety of which is herein incorporated by reference). DNA markers can be developed from nucleic acid molecules using restriction endonucleases, the PCR and/or DNA sequence information. RFLP markers result from single base changes or insertions/deletions. These codominant markers are highly abundant in plant genomes, have a medium level of polymorphism and are developed by a combination of restriction endonuclease digestion and Southern blotting hybridization. CAPS are similarly developed from restriction nuclease digestion but only of specific PCR products. These markers are also codominant, have

a medium level of polymorphism and are highly abundant in the genome. The CAPS result from single base changes and insertions/deletions.

Another marker type, RAPDs, are developed from DNA amplification with random primers and result from single base changes and insertions/deletions in plant genomes. They are dominant markers with a medium level of polymorphisms and are highly abundant. AFLP markers require using the PCR on a subset of restriction fragments from extended adapter primers. These markers are both dominant and codominant are highly abundant in genomes and exhibit a medium level of polymorphism.

SSRs require DNA sequence information. These codominant markers result from repeat length changes, are highly polymorphic and do not exhibit as high a degree of abundance in the genome as CAPS, AFLPs and RAPDs SNPs also require DNA sequence information. These codominant markers result from single base substitutions. They are highly abundant and exhibit a medium of polymorphism (Rafalski *et al.*, In: *Nonmammalian Genomic Analysis*, Birren and Lai (ed.), Academic Press, San Diego, CA, pp. 75-134 (1996), the entirety of which is herein incorporated by reference). It is understood that a nucleic acid molecule of the present invention may be used as a marker.

A PCR probe is a nucleic acid molecule capable of initiating a polymerase activity while in a double-stranded structure to with another nucleic acid. Various methods for determining the structure of PCR probes and PCR techniques exist in the art. Computer generated searches using programs such as Primer3 (www-genome.wi.mit.edu/cgi-bin/primer/primer3.cgi), STSPipeline (www-genome.wi.mit.edu/cgi-bin/www-STS_Pipeline), or GeneUp (Pesole *et al.*, *BioTechniques 25*:112-123 (1998) the entirety of which is herein incorporated by reference), for example, can be used to identify potential PCR primers.

It is understood that a fragment of one or more of the nucleic acid molecules of the present invention may be a probe and specifically a PCR probe.

(b) Protein and Peptide Molecules

A class of agents comprises one or more of the protein or fragments thereof or peptide molecules encoded by SEQ ID NO: 1 through SEQ ID NO: 2814 or one or more of the protein or fragment thereof and peptide molecules encoded by other nucleic acid agents of the present invention. As used herein, the term “protein molecule” or “peptide molecule” includes any molecule that comprises five or more amino acids. It is well known in the art that proteins may undergo modification, including post-translational modifications, such as, but not limited to, disulfide bond formation, glycosylation, phosphorylation, or oligomerization. Thus, as used herein, the term “protein molecule” or “peptide molecule” includes any protein molecule that is modified by any biological or non-biological process. The terms "amino acid" and "amino acids" refer to all naturally occurring L-amino acids. This definition is meant to include norleucine, ornithine, homocysteine and homoserine.

Non-limiting examples of the protein or fragment thereof of the present invention include a maize or a soybean sucrose pathway protein or fragment thereof; a maize or a soybean triose phosphate isomerase or fragment thereof, a maize or a soybean fructose 1,6-bisphosphate aldolase or fragment thereof, a maize or a soybean fructose 1,6-bisphosphate or fragment thereof, a maize or a soybean fructose 6-phosphate 2-kinase or fragment thereof, a maize or a soybean phosphoglucoisomerase or fragment thereof, a maize or a soybean vacuolar H^+ translocating-pyrophosphatase or fragment thereof, a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase or fragment thereof, a maize or a soybean invertase or fragment thereof, a maize or a soybean sucrose synthase or fragment thereof, a maize or a soybean

hexokinase or fragment thereof, a maize or a soybean fructokinase or fragment thereof, a maize or a soybean NDP-kinase or fragment thereof, a maize or a soybean glucose-6-phosphate 1-dehydrogenase or fragment thereof, a maize or a soybean phosphoglucomutase or fragment thereof and a maize or a soybean UDP-glucose pyrophophorylase or fragment thereof.

Non-limiting examples of the protein or fragment molecules of the present invention are a sucrose pathway protein or fragment thereof encoded by: SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof that encode for a sucrose pathway protein or fragment thereof, SEQ ID NO: 1 through SEQ ID NO: 206 and SEQ ID NO: 1538 through SEQ ID NO: 1707 or fragment thereof that encode for a triose phosphate isomerase protein or fragment thereof, SEQ ID NO: 207 through SEQ ID NO: 232 and SEQ ID NO: 1708 through SEQ ID NO: 2113 or fragment thereof that encode for a fructose 1,6-bisphosphate aldolase protein or fragment thereof, SEQ ID NO: 233 through SEQ ID NO: 258 and SEQ ID NO: 2114 through SEQ ID NO: 2162 or fragment thereof that encode for a fructose 1,6-bisphosphate protein or fragment thereof, SEQ ID NO: 259 through SEQ ID NO: 275 and SEQ ID NO: 2163 through SEQ ID NO: 2166 or fragment thereof that encode for a fructose 6-phosphate 2-kinase protein or fragment thereof, SEQ ID NO: 276 through SEQ ID NO: 340 and SEQ ID NO: 2167 through SEQ ID NO: 2182 or fragment thereof that encode for a phosphoglucoisomerase protein or fragment thereof, SEQ ID NO: 341 through SEQ ID NO: 497 and SEQ ID NO: 2183 through SEQ ID NO: 2241 or fragment thereof that encode for a vacuolar H^+ translocating-pyrophosphatase protein or fragment thereof, SEQ ID NO: 498 through SEQ ID NO: 507 and SEQ ID NO: 2442 or fragment thereof that encode for a pyrophosphate-dependent fructose-6-phosphate phosphotransferase protein or fragment thereof, SEQ ID NO: 508 through SEQ ID NO: 510 and SEQ ID NO: 2243 through SEQ ID NO: 2254 or fragment thereof that encode for an invertase protein or fragment thereof,

SEQ ID NO: 511 through SEQ ID NO: 1086 and SEQ ID NO: 2255 through SEQ ID NO: 2590 or fragment thereof that encode for a sucrose synthase protein or fragment thereof, SEQ ID NO: 1087 through SEQ ID NO: 1135 and SEQ ID NO: 2591 through SEQ ID NO: 2634 or fragment thereof that encode for a hexokinase protein or fragment thereof, SEQ ID NO: 1136 through SEQ ID NO: 1215 and SEQ ID NO: 2635 through SEQ ID NO: 2678 or fragment thereof that encode for a fructokinase protein or fragment thereof, SEQ ID NO: 1216 through SEQ ID NO: 1251 and SEQ ID NO: 2679 through SEQ ID NO: 2681 or fragment thereof that encode for a NDP-kinase protein or fragment thereof, SEQ ID NO: 1252 through SEQ ID NO: 1254 and SEQ ID NO: 2682 through SEQ ID NO: 2689 or fragment thereof that encode for a glucose-6-phosphate 1-dehydrogenase protein or fragment thereof, SEQ ID NO: 1255 through SEQ ID NO: 1360 and SEQ ID NO: 2690 through SEQ ID NO: 2740 or fragment thereof that encode for a phosphoglucomutase protein or fragment thereof and SEQ ID NO: 1361 through SEQ ID NO: 1537 and SEQ ID NO: 2741 through SEQ ID NO: 2814 or fragment thereof that encode for an UDP-glucose pyrophophorylase protein or fragment thereof.

One or more of the protein or fragment of peptide molecules may be produced via chemical synthesis, or more preferably, by expressing in a suitable bacterial or eucaryotic host. Suitable methods for expression are described by Sambrook *et al.*, (In: *Molecular Cloning, A Laboratory Manual, 2nd Edition*, *Cold Spring Harbor Press*, Cold Spring Harbor, New York (1989)), or similar texts. For example, the protein may be expressed in, for example, Uses of the Agents of the Invention, Section (a) Plant Constructs and Plant Transformants; Section (b) Fungal Constructs and Fungal Transformants; Section (c) Mammalian Constructs and Transformed Mammalian Cells; Section (d) Insect Constructs and Transformed Insect Cells; and Section (e) Bacterial Constructs and Transformed Bacterial Cells.

A "protein fragment" is a peptide or polypeptide molecule whose amino acid sequence comprises a subset of the amino acid sequence of that protein. A protein or fragment thereof that comprises one or more additional peptide regions not derived from that protein is a "fusion" protein. Such molecules may be derivatized to contain carbohydrate or other moieties (such as keyhole limpet hemocyanin, etc.). Fusion protein or peptide molecules of the present invention are preferably produced via recombinant means.

Another class of agents comprise protein or peptide molecules or fragments or fusions thereof encoded by SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof in which conservative, non-essential or non-relevant amino acid residues have been added, replaced or deleted. Computerized means for designing modifications in protein structure are known in the art (Dahiyat and Mayo, *Science* 278:82-87 (1997), the entirety of which is herein incorporated by reference).

The protein molecules of the present invention include plant homologue proteins. An example of such a homologue is a homologue protein of a non-maize or non-soybean plant species, that include but not limited to alfalfa, *Arabidopsis*, barley, *Brassica*, broccoli, cabbage, citrus, cotton, garlic, oat, oilseed rape, onion, canola, flax, an ornamental plant, pea, peanut, pepper, potato, rice, rye, sorghum, strawberry, sugarcane, sugarbeet, tomato, wheat, poplar, pine, fir, eucalyptus, apple, lettuce, lentils, grape, banana, tea, turf grasses, sunflower, oil palm, *Phaseolus* etc. Particularly preferred non-maize or non-soybean for use for the isolation of homologs would include, *Arabidopsis,* barley, cotton, oat, oilseed rape, rice, canola, ornamentals, sugarcane, sugarbeet, tomato, potato, wheat and turf grasses. Such a homologue can be obtained by any of a variety of methods. Most preferably, as indicated above, one or more of the disclosed sequences (SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof) will be

used to define a pair of primers that may be used to isolate the homologue-encoding nucleic acid molecules from any desired species. Such molecules can be expressed to yield homologues by recombinant means.

(c) Antibodies

One aspect of the present invention concerns antibodies, single-chain antigen binding molecules, or other proteins that specifically bind to one or more of the protein or peptide molecules of the present invention and their homologues, fusions or fragments. Such antibodies may be used to quantitatively or qualitatively detect the protein or peptide molecules of the present invention. As used herein, an antibody or peptide is said to "specifically bind" to a protein or peptide molecule of the present invention if such binding is not competitively inhibited by the presence of non-related molecules.

Nucleic acid molecules that encode all or part of the protein of the present invention can be expressed, via recombinant means, to yield protein or peptides that can in turn be used to elicit antibodies that are capable of binding the expressed protein or peptide. Such antibodies may be used in immunoassays for that protein. Such protein-encoding molecules, or their fragments may be a "fusion" molecule (i.e., a part of a larger nucleic acid molecule) such that, upon expression, a fusion protein is produced. It is understood that any of the nucleic acid molecules of the present invention may be expressed, via recombinant means, to yield proteins or peptides encoded by these nucleic acid molecules.

The antibodies that specifically bind proteins and protein fragments of the present invention may be polyclonal or monoclonal and may comprise intact immunoglobulins, or antigen binding portions of immunoglobulins fragments (such as (F(ab'), $F(ab')_2$), or single-chain

immunoglobulins producible, for example, via recombinant means. It is understood that practitioners are familiar with the standard resource materials which describe specific conditions and procedures for the construction, manipulation and isolation of antibodies (*see*, for example, Harlow and Lane, In: *Antibodies: A Laboratory Manual,* Cold Spring Harbor Press, Cold Spring Harbor, New York (1988), the entirety of which is herein incorporated by reference).

Murine monoclonal antibodies are particularly preferred. BALB/c mice are preferred for this purpose, however, equivalent strains may also be used. The animals are preferably immunized with approximately 25 μg of purified protein (or fragment thereof) that has been emulsified in a suitable adjuvant (such as TiterMax adjuvant (Vaxcel, Norcross, GA)). Immunization is preferably conducted at two intramuscular sites, one intraperitoneal site and one subcutaneous site at the base of the tail. An additional i.v. injection of approximately 25 μg of antigen is preferably given in normal saline three weeks later. After approximately 11 days following the second injection, the mice may be bled and the blood screened for the presence of anti-protein or peptide antibodies. Preferably, a direct binding Enzyme-Linked Immunoassay (ELISA) is employed for this purpose.

More preferably, the mouse having the highest antibody titer is given a third i.v. injection of approximately 25 μg of the same protein or fragment. The splenic leukocytes from this animal may be recovered 3 days later and then permitted to fuse, most preferably, using polyethylene glycol, with cells of a suitable myeloma cell line (such as, for example, the P3X63Ag8.653 myeloma cell line). Hybridoma cells are selected by culturing the cells under "HAT" (hypoxanthine-aminopterin-thymine) selection for about one week. The resulting clones may then be screened for their capacity to produce monoclonal antibodies ("mAbs"), preferably by direct ELISA.

In one embodiment, anti-protein or peptide monoclonal antibodies are isolated using a fusion of a protein or peptide of the present invention, or conjugate of a protein or peptide of the present invention, as immunogens. Thus, for example, a group of mice can be immunized using a fusion protein emulsified in Freund's complete adjuvant (*e.g.* approximately 50 μg of antigen per immunization). At three week intervals, an identical amount of antigen is emulsified in Freund's incomplete adjuvant and used to immunize the animals. Ten days following the third immunization, serum samples are taken and evaluated for the presence of antibody. If antibody titers are too low, a fourth booster can be employed. Polysera capable of binding the protein or peptide can also be obtained using this method.

In a preferred procedure for obtaining monoclonal antibodies, the spleens of the above-described immunized mice are removed, disrupted and immune splenocytes are isolated over a ficoll gradient. The isolated splenocytes are fused, using polyethylene glycol with BALB/c-derived HGPRT (hypoxanthine guanine phosphoribosyl transferase) deficient P3x63xAg8.653 plasmacytoma cells. The fused cells are plated into 96 well microtiter plates and screened for hybridoma fusion cells by their capacity to grow in culture medium supplemented with hypothanthine, aminopterin and thymidine for approximately 2-3 weeks.

Hybridoma cells that arise from such incubation are preferably screened for their capacity to produce an immunoglobulin that binds to a protein of interest. An indirect ELISA may be used for this purpose. In brief, the supernatants of hybridomas are incubated in microtiter wells that contain immobilized protein. After washing, the titer of bound immunoglobulin can be determined using, for example, a goat anti-mouse antibody conjugated to horseradish peroxidase. After additional washing, the amount of immobilized enzyme is determined (for example through the use of a chromogenic substrate). Such screening is performed as quickly as possible

after the identification of the hybridoma in order to ensure that a desired clone is not overgrown by non-secreting neighbor cells. Desirably, the fusion plates are screened several times since the rates of hybridoma growth vary. In a preferred sub-embodiment, a different antigenic form may be used to screen the hybridoma. Thus, for example, the splenocytes may be immunized with one immunogen, but the resulting hybridomas can be screened using a different immunogen. It is understood that any of the protein or peptide molecules of the present invention may be used to raise antibodies.

As discussed below, such antibody molecules or their fragments may be used for diagnostic purposes. Where the antibodies are intended for diagnostic purposes, it may be desirable to derivatize them, for example with a ligand group (such as biotin) or a detectable marker group (such as a fluorescent group, a radioisotope or an enzyme).

The ability to produce antibodies that bind the protein or peptide molecules of the present invention permits the identification of mimetic compounds of those molecules. A "mimetic compound" is a compound that is not that compound, or a fragment of that compound, but which nonetheless exhibits an ability to specifically bind to antibodies directed against that compound.

It is understood that any of the agents of the present invention can be substantially purified and/or be biologically active and/or recombinant.

Uses of the Agents of the Invention

Nucleic acid molecules and fragments thereof of the present invention may be employed to obtain other nucleic acid molecules from the same species (e.g., ESTs or fragment thereof from maize may be utilized to obtain other nucleic acid molecules from maize). Such nucleic acid molecules include the nucleic acid molecules that encode the complete coding sequence of a protein and promoters and flanking sequences of such molecules. In addition, such nucleic acid

molecules include nucleic acid molecules that encode for other isozymes or gene family members. Such molecules can be readily obtained by using the above-described nucleic acid molecules or fragments thereof to screen cDNA or genomic libraries obtained from maize or soybean. Methods for forming such libraries are well known in the art.

Nucleic acid molecules and fragments thereof of the present invention may also be employed to obtain nucleic acid homologues. Such homologues include the nucleic acid molecule of other plants or other organisms (*e.g.*, alfalfa, *Arabidopsis*, barley, *Brassica*, broccoli, cabbage, citrus, cotton, garlic, oat, oilseed rape, onion, canola, flax, an ornamental plant, pea, peanut, pepper, potato, rice, rye, sorghum, strawberry, sugarcane, sugarbeet, tomato, wheat, poplar, pine, fir, eucalyptus, apple, lettuce, lentils, grape, banana, tea, turf grasses, sunflower, oil palm, *Phaseolus,* etc.) including the nucleic acid molecules that encode, in whole or in part, protein homologues of other plant species or other organisms, sequences of genetic elements such as promoters and transcriptional regulatory elements. Such molecules can be readily obtained by using the above-described nucleic acid molecules or fragments thereof to screen cDNA or genomic libraries obtained from such plant species. Methods for forming such libraries are well known in the art. Such homologue molecules may differ in their nucleotide sequences from those found in one or more of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof because complete complementarity is not needed for stable hybridization. The nucleic acid molecules of the present invention therefore also include molecules that, although capable of specifically hybridizing with the nucleic acid molecules, may lack "complete complementarity."

Any of a variety of methods may be used to obtain one or more of the above-described nucleic acid molecules (Zamechik *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 83*:4143-4146 (1986), the entirety of which is herein incorporated by reference; Goodchild *et al.*, *Proc. Natl. Acad. Sci.*

(U.S.A.) 85:5507-5511 (1988), the entirety of which is herein incorporated by reference; Wickstrom *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 85*:1028-1032 (1988), the entirety of which is herein incorporated by reference; Holt *et al.*, *Molec. Cell. Biol. 8*:963-973 (1988), the entirety of which is herein incorporated by reference; Gerwirtz *et al.*, *Science 242*:1303-1306 (1988), the entirety of which is herein incorporated by reference; Anfossi *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:3379-3383 (1989), the entirety of which is herein incorporated by reference; Becker *et al.*, *EMBO J. 8*:3685-3691 (1989); the entirety of which is herein incorporated by reference). Automated nucleic acid synthesizers may be employed for this purpose. In lieu of such synthesis, the disclosed nucleic acid molecules may be used to define a pair of primers that can be used with the polymerase chain reaction (Mullis *et al.*, *Cold Spring Harbor Symp. Quant. Biol. 51*:263-273 (1986); Erlich *et al.*, European Patent 50,424; European Patent 84,796; European Patent 258,017; European Patent 237,362; Mullis, European Patent 201,184; Mullis *et al.*, U.S. Patent 4,683,202; Erlich, U.S. Patent 4,582,788; and Saiki *et al.*, U.S. Patent 4,683,194, all of which are herein incorporated by reference in their entirety) to amplify and obtain any desired nucleic acid molecule or fragment.

Promoter sequence(s) and other genetic elements, including but not limited to transcriptional regulatory flanking sequences, associated with one or more of the disclosed nucleic acid sequences can also be obtained using the disclosed nucleic acid sequence provided herein. In one embodiment, such sequences are obtained by incubating EST nucleic acid molecules or preferably fragments thereof with members of genomic libraries (*e.g.* maize and soybean) and recovering clones that hybridize to the EST nucleic acid molecule or fragment thereof. In a second embodiment, methods of "chromosome walking," or inverse PCR may be used to obtain such sequences (Frohman *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 85*:8998-9002

(1988); Ohara *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:5673-5677 (1989); Pang *et al.*, *Biotechniques 22:*1046-1048 (1977); Huang *et al., Methods Mol. Biol. 69:*89-96 (1997); Huang *et al., Method Mol. Biol. 67:*287-294 (1997); Benkel *et al., Genet. Anal. 13:*123-127 (1996); Hartl *et al., Methods Mol. Biol. 58:*293-301 (1996), all of which are herein incorporated by reference in their entirety).

The nucleic acid molecules of the present invention may be used to isolate promoters of cell enhanced, cell specific, tissue enhanced, tissue specific, developmentally or environmentally regulated expression profiles. Isolation and functional analysis of the 5' flanking promoter sequences of these genes from genomic libraries, for example, using genomic screening methods and PCR techniques would result in the isolation of useful promoters and transcriptional regulatory elements. These methods are known to those of skill in the art and have been described (See, for example, Birren *et al.*, *Genome Analysis*: *Analyzing DNA*, 1, (1997), Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., the entirety of which is herein incorporated by reference). Promoters obtained utilizing the nucleic acid molecules of the present invention could also be modified to affect their control characteristics. Examples of such modifications would include but are not limited to enhanced sequences as reported in Uses of the Agents of the Invention, Section (a) Plant Constructs and Plant Transformants. Such genetic elements could be used to enhance gene expression of new and existing traits for crop improvements.

In one sub-aspect, such an analysis is conducted by determining the presence and/or identity of polymorphism(s) by one or more of the nucleic acid molecules of the present invention and more preferably one or more of the EST nucleic acid molecule or fragment thereof which are associated with a phenotype, or a predisposition to that phenotype.

Any of a variety of molecules can be used to identify such polymorphism(s). In one embodiment, one or more of the EST nucleic acid molecules (or a sub-fragment thereof) may be employed as a marker nucleic acid molecule to identify such polymorphism(s). Alternatively, such polymorphisms can be detected through the use of a marker nucleic acid molecule or a marker protein that is genetically linked to (i.e., a polynucleotide that co-segregates with) such polymorphism(s).

In an alternative embodiment, such polymorphisms can be detected through the use of a marker nucleic acid molecule that is physically linked to such polymorphism(s). For this purpose, marker nucleic acid molecules comprising a nucleotide sequence of a polynucleotide located within 1mb of the polymorphism(s) and more preferably within 100kb of the polymorphism(s) and most preferably within 10kb of the polymorphism(s) can be employed.

The genomes of animals and plants naturally undergo spontaneous mutation in the course of their continuing evolution (Gusella, *Ann. Rev. Biochem.* *55*:831-854 (1986)). A "polymorphism" is a variation or difference in the sequence of the gene or its flanking regions that arises in some of the members of a species. The variant sequence and the "original" sequence co-exist in the species' population. In some instances, such co-existence is in stable or quasi-stable equilibrium.

A polymorphism is thus said to be "allelic," in that, due to the existence of the polymorphism, some members of a species may have the original sequence (i.e., the original "allele") whereas other members may have the variant sequence (i.e., the variant "allele"). In the simplest case, only one variant sequence may exist and the polymorphism is thus said to be di-allelic. In other cases, the species' population may contain multiple alleles and the polymorphism is termed tri-allelic, etc. A single gene may have multiple different unrelated

polymorphisms. For example, it may have a di-allelic polymorphism at one site and a multi-allelic polymorphism at another site.

The variation that defines the polymorphism may range from a single nucleotide variation to the insertion or deletion of extended regions within a gene. In some cases, the DNA sequence variations are in regions of the genome that are characterized by short tandem repeats (STRs) that include tandem di- or tri-nucleotide repeated motifs of nucleotides. Polymorphisms characterized by such tandem repeats are referred to as "variable number tandem repeat" ("VNTR") polymorphisms. VNTRs have been used in identity analysis (Weber, U.S. Patent 5,075,217; Armour *et al., FEBS Lett. 307*:113-115 (1992); Jones *et al., Eur. J. Haematol. 39*:144-147 (1987); Horn *et al.*, PCT Patent Application WO91/14003; Jeffreys, European Patent Application 370,719; Jeffreys, U.S. Patent 5,175,082; Jeffreys *et al., Amer. J. Hum. Genet. 39*:11-24 (1986); Jeffreys *et al., Nature 316*:76-79 (1985); Gray *et al., Proc. R. Acad. Soc. Lond. 243*:241-253 (1991); Moore *et al., Genomics 10*:654-660 (1991); Jeffreys *et al., Anim. Genet. 18*:1-15 (1987); Hillel *et al., Anim. Genet. 20*:145-155 (1989); Hillel *et al., Genet. 124*:783-789 (1990), all of which are herein incorporated by reference in their entirety).

The detection of polymorphic sites in a sample of DNA may be facilitated through the use of nucleic acid amplification methods. Such methods specifically increase the concentration of polynucleotides that span the polymorphic site, or include that site and sequences located either distal or proximal to it. Such amplified molecules can be readily detected by gel electrophoresis or other means.

The most preferred method of achieving such amplification employs the polymerase chain reaction ("PCR") (Mullis *et al., Cold Spring Harbor Symp. Quant. Biol. 51*:263-273 (1986); Erlich *et al.*, European Patent Appln. 50,424; European Patent Appln. 84,796; European

Patent Application 258,017; European Patent Appln. 237,362; Mullis, European Patent Appln. 201,184; Mullis *et al.*, U.S. Patent No. 4,683,202; Erlich, U.S. Patent No. 4,582,788; and Saiki *et al.*, U.S. Patent No. 4,683,194), using primer pairs that are capable of hybridizing to the proximal sequences that define a polymorphism in its double-stranded form.

In lieu of PCR, alternative methods, such as the "Ligase Chain Reaction" ("LCR") may be used (Barany, *Proc. Natl. Acad. Sci. (U.S.A.) 88*:189-193 (1991), the entirety of which is herein incorporated by reference). LCR uses two pairs of oligonucleotide probes to exponentially amplify a specific target. The sequences of each pair of oligonucleotides is selected to permit the pair to hybridize to abutting sequences of the same strand of the target. Such hybridization forms a substrate for a template-dependent ligase. As with PCR, the resulting products thus serve as a template in subsequent cycles and an exponential amplification of the desired sequence is obtained.

LCR can be performed with oligonucleotides having the proximal and distal sequences of the same strand of a polymorphic site. In one embodiment, either oligonucleotide will be designed to include the actual polymorphic site of the polymorphism. In such an embodiment, the reaction conditions are selected such that the oligonucleotides can be ligated together only if the target molecule either contains or lacks the specific nucleotide that is complementary to the polymorphic site present on the oligonucleotide. Alternatively, the oligonucleotides may be selected such that they do not include the polymorphic site (see, Segev, PCT Application WO 90/01069, the entirety of which is herein incorporated by reference).

The "Oligonucleotide Ligation Assay" ("OLA") may alternatively be employed (Landegren *et al.*, *Science 241*:1077-1080 (1988), the entirety of which is herein incorporated by reference). The OLA protocol uses two oligonucleotides which are designed to be capable of

hybridizing to abutting sequences of a single strand of a target. OLA, like LCR, is particularly suited for the detection of point mutations. Unlike LCR, however, OLA results in "linear" rather than exponential amplification of the target sequence.

Nickerson *et al.,* have described a nucleic acid detection assay that combines attributes of PCR and OLA (Nickerson *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 87*:8923-8927 (1990), the entirety of which is herein incorporated by reference). In this method, PCR is used to achieve the exponential amplification of target DNA, which is then detected using OLA. In addition to requiring multiple and separate, processing steps, one problem associated with such combinations is that they inherit all of the problems associated with PCR and OLA.

Schemes based on ligation of two (or more) oligonucleotides in the presence of nucleic acid having the sequence of the resulting "di-oligonucleotide", thereby amplifying the di-oligonucleotide, are also known (Wu *et al.*, *Genomics 4*:560-569 (1989), the entirety of which is herein incorporated by reference) and may be readily adapted to the purposes of the present invention.

Other known nucleic acid amplification procedures, such as allele-specific oligomers, branched DNA technology, transcription-based amplification systems, or isothermal amplification methods may also be used to amplify and analyze such polymorphisms (Malek *et al.*, U.S. Patent 5,130,238; Davey *et al.*, European Patent Application 329,822; Schuster *et al.*, U.S. Patent 5,169,766; Miller *et al.*, PCT Patent Application WO 89/06700; Kwoh *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:1173-1177 (1989); Gingeras *et al.*, PCT Patent Application WO 88/10315; Walker *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 89*:392-396 (1992), all of which are herein incorporated by reference in their entirety).

The identification of a polymorphism can be determined in a variety of ways. By correlating the presence or absence of it in a plant with the presence or absence of a phenotype, it is possible to predict the phenotype of that plant. If a polymorphism creates or destroys a restriction endonuclease cleavage site, or if it results in the loss or insertion of DNA (e.g., a VNTR polymorphism), it will alter the size or profile of the DNA fragments that are generated by digestion with that restriction endonuclease. As such, individuals that possess a variant sequence can be distinguished from those having the original sequence by restriction fragment analysis. Polymorphisms that can be identified in this manner are termed "restriction fragment length polymorphisms" ("RFLPs"). RFLPs have been widely used in human and plant genetic analyses (Glassberg, UK Patent Application 2135774; Skolnick *et al.*, *Cytogen. Cell Genet.* *32*:58-67 (1982); Botstein *et al.*, *Ann. J. Hum. Genet.* *32*:314-331 (1980); Fischer *et al.*, (PCT Application WO90/13668); Uhlen, PCT Application WO90/11369).

Polymorphisms can also be identified by Single Strand Conformation Polymorphism (SSCP) analysis. SSCP is a method capable of identifying most sequence variations in a single strand of DNA, typically between 150 and 250 nucleotides in length (Elles, *Methods in Molecular Medicine: Molecular Diagnosis of Genetic Diseases*, Humana Press (1996), the entirety of which is herein incorporated by reference); Orita *et al., Genomics 5:*874-879 (1989), the entirety of which is herein incorporated by reference). Under denaturing conditions a single strand of DNA will adopt a conformation that is uniquely dependent on its sequence conformation. This conformation usually will be different, even if only a single base is changed. Most conformations have been reported to alter the physical configuration or size sufficiently to be detectable by electrophoresis. A number of protocols have been described for SSCP including, but not limited to, Lee *et al., Anal. Biochem. 205:*289-293 (1992), the entirety of

which is herein incorporated by reference; Suzuki *et al., Anal. Biochem. 192:*82-84 (1991), the entirety of which is herein incorporated by reference; Lo *et al., Nucleic Acids Research 20:*1005-1009 (1992), the entirety of which is herein incorporated by reference; Sarkar *et al., Genomics 13:*441-443 (1992), the entirety of which is herein incorporated by reference. It is understood that one or more of the nucleic acids of the present invention, may be utilized as markers or probes to detect polymorphisms by SSCP analysis.

Polymorphisms may also be found using a DNA fingerprinting technique called amplified fragment length polymorphism (AFLP), which is based on the selective PCR amplification of restriction fragments from a total digest of genomic DNA to profile that DNA (Vos *et al.*, *Nucleic Acids Res. 23*:4407-4414 (1995), the entirety of which is herein incorporated by reference). This method allows for the specific co-amplification of high numbers of restriction fragments, which can be visualized by PCR without knowledge of the nucleic acid sequence.

AFLP employs basically three steps. Initially, a sample of genomic DNA is cut with restriction enzymes and oligonucleotide adapters are ligated to the restriction fragments of the DNA. The restriction fragments are then amplified using PCR by using the adapter and restriction sequence as target sites for primer annealing. The selective amplification is achieved by the use of primers that extend into the restriction fragments, amplifying only those fragments in which the primer extensions match the nucleotide flanking the restriction sites. These amplified fragments are then visualized on a denaturing polyacrylamide gel.

AFLP analysis has been performed on *Salix* (Beismann *et al.*, *Mol. Ecol. 6*:989-993 (1997), the entirety of which is herein incorporated by reference), *Acinetobacter* (Janssen *et al.*, *Int. J. Syst. Bacteriol. 47*:1179-1187 (1997), the entirety of which is herein incorporated by

reference), *Aeromonas popoffi* (Huys *et al.*, *Int. J. Syst. Bacteriol. 47*:1165-1171 (1997), the entirety of which is herein incorporated by reference), rice (McCouch *et al.*, *Plant Mol. Biol. 35*:89-99 (1997), the entirety of which is herein incorporated by reference; Nandi *et al.*, *Mol. Gen. Genet. 255*:1-8 (1997), the entirety of which is herein incorporated by reference; Cho *et al.*, *Genome 39*:373-378 (1996), the entirety of which is herein incorporated by reference), barley (*Hordeum vulgare*)(Simons *et al.*, *Genomics 44*:61-70 (1997), the entirety of which is herein incorporated by reference; Waugh *et al.*, *Mol. Gen. Genet. 255*:311-321 (1997), the entirety of which is herein incorporated by reference; Qi *et al.*, *Mol. Gen Genet. 254*:330-336 (1997), the entirety of which is herein incorporated by reference; Becker *et al.*, *Mol. Gen. Genet. 249*:65-73 (1995), the entirety of which is herein incorporated by reference), potato (Van der Voort *et al.*, *Mol. Gen. Genet. 255*:438-447 (1997), the entirety of which is herein incorporated by reference; Meksem *et al.*, *Mol. Gen. Genet. 249*:74-81 (1995), the entirety of which is herein incorporated by reference), *Phytophthora infestans* (Van der Lee *et al.*, *Fungal Genet. Biol. 21*:278-291 (1997), the entirety of which is herein incorporated by reference), *Bacillus anthracis* (Keim *et al.*, *J. Bacteriol. 179*:818-824 (1997), the entirety of which is herein incorporated by reference), *Astragalus cremnophylax* (Travis *et al.*, *Mol. Ecol. 5*:735-745 (1996), the entirety of which is herein incorporated by reference), *Arabidopsis* (Cnops *et al.*, *Mol. Gen. Genet. 253*:32-41 (1996), the entirety of which is herein incorporated by reference), *Escherichia coli* (Lin *et al.*, *Nucleic Acids Res. 24*:3649-3650 (1996), the entirety of which is herein incorporated by reference), *Aeromonas* (Huys *et al.*, *Int. J. Syst. Bacteriol. 46*:572-580 (1996), the entirety of which is herein incorporated by reference), nematode (Folkertsma *et al.*, *Mol. Plant Microbe Interact. 9*:47-54 (1996), the entirety of which is herein incorporated by reference), tomato (Thomas *et al.*, *Plant J. 8*:785-794 (1995), the entirety of which is herein incorporated by reference) and human (Latorra

et al., *PCR Methods Appl.* *3*:351-358 (1994), the entirety of which is herein incorporated by reference). AFLP analysis has also been used for fingerprinting mRNA (Money *et al.*, *Nucleic Acids Res.* *24*:2616-2617 (1996), the entirety of which is herein incorporated by reference; Bachem *et al.*, *Plant J.* *9*:745-753 (1996), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acids of the present invention, may be utilized as markers or probes to detect polymorphisms by AFLP analysis or for fingerprinting RNA.

Polymorphisms may also be found using random amplified polymorphic DNA (RAPD) (Williams *et al., Nucl. Acids Res.* *18*:6531-6535 (1990), the entirety of which is herein incorporated by reference) and cleaveable amplified polymorphic sequences (CAPS) (Lyamichev *et al.*, *Science* *260*:778-783 (1993), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acid molecules of the present invention, may be utilized as markers or probes to detect polymorphisms by RAPD or CAPS analysis.

Through genetic mapping, a fine scale linkage map can be developed using DNA markers and, then, a genomic DNA library of large-sized fragments can be screened with molecular markers linked to the desired trait. Molecular markers are advantageous for agronomic traits that are otherwise difficult to tag, such as resistance to pathogens, insects and nematodes, tolerance to abiotic stress, quality parameters and quantitative traits such as high yield potential.

The essential requirements for marker-assisted selection in a plant breeding program are: (1) the marker(s) should co-segregate or be closely linked with the desired trait; (2) an efficient means of screening large populations for the molecular marker(s) should be available; and (3) the screening technique should have high reproducibility across laboratories and preferably be economical to use and be user-friendly.

The genetic linkage of marker molecules can be established by a gene mapping model such as, without limitation, the flanking marker model reported by Lander and Botstein, *Genetics 121*:185-199 (1989) and the interval mapping, based on maximum likelihood methods described by Lander and Botstein, *Genetics 121*:185-199 (1989) and implemented in the software package MAPMAKER/QTL (Lincoln and Lander, *Mapping Genes Controlling Quantitative Traits Using MAPMAKER/QTL,* Whitehead Institute for Biomedical Research, Massachusetts, (1990). Additional software includes Qgene, Version 2.23 (1996), Department of Plant Breeding and Biometry, 266 Emerson Hall, Cornell University, Ithaca, NY, the manual of which is herein incorporated by reference in its entirety). Use of Qgene software is a particularly preferred approach.

A maximum likelihood estimate (MLE) for the presence of a marker is calculated, together with an MLE assuming no QTL effect, to avoid false positives. A $\log_{10}$ of an odds ratio (LOD) is then calculated as: LOD = $\log_{10}$(MLE for the presence of a QTL/MLE given no linked QTL).

The LOD score essentially indicates how much more likely the data are to have arisen assuming the presence of a QTL than in its absence. The LOD threshold value for avoiding a false positive with a given confidence, say 95%, depends on the number of markers and the length of the genome. Graphs indicating LOD thresholds are set forth in Lander and Botstein, *Genetics 121*:185-199 (1989) the entirety of which is herein incorporated by reference and further described by Arús and Moreno-González , *Plant Breeding*, Hayward *et al.,* (eds.) Chapman & Hall, London, pp. 314-331 (1993), the entirety of which is herein incorporated by reference.

Additional models can be used. Many modifications and alternative approaches to interval mapping have been reported, including the use non-parametric methods (Kruglyak and Lander, *Genetics 139:*1421-1428 (1995), the entirety of which is herein incorporated by reference). Multiple regression methods or models can be also be used, in which the trait is regressed on a large number of markers (Jansen, *Biometrics in Plant Breeding*, van Oijen and Jansen (eds.), Proceedings of the Ninth Meeting of the Eucarpia Section Biometrics in Plant Breeding, The Netherlands, pp. 116-124 (1994); Weber and Wricke, *Advances in Plant Breeding,* Blackwell, Berlin, 16 (1994), both of which is herein incorporated by reference in their entirety). Procedures combining interval mapping with regression analysis, whereby the phenotype is regressed onto a single putative QTL at a given marker interval and at the same time onto a number of markers that serve as 'cofactors,' have been reported by Jansen and Stam, *Genetics 136*:1447-1455 (1994), the entirety of which is herein incorporated by reference and Zeng, *Genetics 136*:1457-1468 (1994) the entirety of which is herein incorporated by reference. Generally, the use of cofactors reduces the bias and sampling error of the estimated QTL positions (Utz and Melchinger, *Biometrics in Plant Breeding,* van Oijen and Jansen (eds.) Proceedings of the Ninth Meeting of the Eucarpia Section Biometrics in Plant Breeding, The Netherlands, pp.195-204 (1994), the entirety of which is herein incorporated by reference, thereby improving the precision and efficiency of QTL mapping (Zeng, *Genetics 136*:1457-1468 (1994)). These models can be extended to multi-environment experiments to analyze genotype-environment interactions (Jansen *et al., Theo. Appl. Genet. 91:*33-37 (1995), the entirety of which is herein incorporated by reference).

Selection of an appropriate mapping populations is important to map construction. The choice of appropriate mapping population depends on the type of marker systems employed

(Tanksley *et al., Molecular mapping plant chromosomes. Chromosome structure and function: Impact of new concepts,* Gustafson and Appels (eds.), Plenum Press, New York, pp 157-173 (1988), the entirety of which is herein incorporated by reference). Consideration must be given to the source of parents (adapted vs. exotic) used in the mapping population. Chromosome pairing and recombination rates can be severely disturbed (suppressed) in wide crosses (adapted x exotic) and generally yield greatly reduced linkage distances. Wide crosses will usually provide segregating populations with a relatively large array of polymorphisms when compared to progeny in a narrow cross (adapted x adapted).

An F_2 population is the first generation of selfing after the hybrid seed is produced. Usually a single F_1 plant is selfed to generate a population segregating for all the genes in Mendelian (1:2:1) fashion. Maximum genetic information is obtained from a completely classified F_2 population using a codominant marker system (Mather, *Measurement of Linkage in Heredity,* Methuen and Co., (1938), the entirety of which is herein incorporated by reference). In the case of dominant markers, progeny tests (e.g. F_3, BCF_2) are required to identify the heterozygotes, thus making it equivalent to a completely classified F_2 population. However, this procedure is often prohibitive because of the cost and time involved in progeny testing. Progeny testing of F_2 individuals is often used in map construction where phenotypes do not consistently reflect genotype (e.g. disease resistance) or where trait expression is controlled by a QTL. Segregation data from progeny test populations (e.g. F_3 or BCF_2) can be used in map construction. Marker-assisted selection can then be applied to cross progeny based on marker-trait map associations (F_2, F_3), where linkage groups have not been completely disassociated by recombination events (i.e., maximum disequillibrium).

Recombinant inbred lines (RIL) (genetically related lines; usually >F_5, developed from continuously selfing F_2 lines towards homozygosity) can be used as a mapping population. Information obtained from dominant markers can be maximized by using RIL because all loci are homozygous or nearly so. Under conditions of tight linkage (i.e., about <10% recombination), dominant and co-dominant markers evaluated in RIL populations provide more information per individual than either marker type in backcross populations (Reiter *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 89*:1477-1481 (1992), the entirety of which is herein incorporated by reference). However, as the distance between markers becomes larger (i.e., loci become more independent), the information in RIL populations decreases dramatically when compared to codominant markers.

Backcross populations (e.g., generated from a cross between a successful variety (recurrent parent) and another variety (donor parent) carrying a trait not present in the former) can be utilized as a mapping population. A series of backcrosses to the recurrent parent can be made to recover most of its desirable traits. Thus a population is created consisting of individuals nearly like the recurrent parent but each individual carries varying amounts or mosaic of genomic regions from the donor parent. Backcross populations can be useful for mapping dominant markers if all loci in the recurrent parent are homozygous and the donor and recurrent parent have contrasting polymorphic marker alleles (Reiter *et al., Proc. Natl. Acad. Sci. (U.S.A.) 89*:1477-1481 (1992)). Information obtained from backcross populations using either codominant or dominant markers is less than that obtained from F_2 populations because one, rather than two, recombinant gametes are sampled per plant. Backcross populations, however, are more informative (at low marker saturation) when compared to RILs as the distance between linked loci increases in RIL populations (i.e. about 15% recombination). Increased

recombination can be beneficial for resolution of tight linkages, but may be undesirable in the construction of maps with low marker saturation.

Near-isogenic lines (NIL) created by many backcrosses to produce an array of individuals that are nearly identical in genetic composition except for the trait or genomic region under interrogation can be used as a mapping population. In mapping with NILs, only a portion of the polymorphic loci are expected to map to a selected region.

Bulk segregant analysis (BSA) is a method developed for the rapid identification of linkage between markers and traits of interest (Michelmore *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.)* *88*:9828-9832 (1991), the entirety of which is herein incorporated by reference). In BSA, two bulked DNA samples are drawn from a segregating population originating from a single cross. These bulks contain individuals that are identical for a particular trait (resistant or susceptible to particular disease) or genomic region but arbitrary at unlinked regions (i.e. heterozygous). Regions unlinked to the target region will not differ between the bulked samples of many individuals in BSA.

It is understood that one or more of the nucleic acid molecules of the present invention may be used as molecular markers. It is also understood that one or more of the protein molecules of the present invention may be used as molecular markers.

In accordance with this aspect of the present invention, a sample nucleic acid is obtained from plants cells or tissues. Any source of nucleic acid may be used. Preferably, the nucleic acid is genomic DNA. The nucleic acid is subjected to restriction endonuclease digestion. For example, one or more nucleic acid molecule or fragment thereof of the present invention can be used as a probe in accordance with the above-described polymorphic methods. The polymorphism obtained in this approach can then be cloned to identify the mutation at the coding

region which alters the protein's structure or regulatory region of the gene which affects its expression level.

In an aspect of the present invention, one or more of the nucleic molecules of the present invention are used to determine the level (i.e., the concentration of mRNA in a sample, etc.) in a plant (preferably maize or soybean) or pattern (i.e., the kinetics of expression, rate of decomposition, stability profile, etc.) of the expression of a protein encoded in part or whole by one or more of the nucleic acid molecule of the present invention (collectively, the "Expression Response" of a cell or tissue). As used herein, the Expression Response manifested by a cell or tissue is said to be "altered" if it differs from the Expression Response of cells or tissues of plants not exhibiting the phenotype. To determine whether a Expression Response is altered, the Expression Response manifested by the cell or tissue of the plant exhibiting the phenotype is compared with that of a similar cell or tissue sample of a plant not exhibiting the phenotype. As will be appreciated, it is not necessary to re-determine the Expression Response of the cell or tissue sample of plants not exhibiting the phenotype each time such a comparison is made; rather, the Expression Response of a particular plant may be compared with previously obtained values of normal plants. As used herein, the phenotype of the organism is any of one or more characteristics of an organism (e.g. disease resistance, pest tolerance, environmental tolerance such as tolerance to abiotic stress, male sterility, quality improvement or yield etc.). A change in genotype or phenotype may be transient or permanent. Also as used herein, a tissue sample is any sample that comprises more than one cell. In a preferred aspect, a tissue sample comprises cells that share a common characteristic (e.g. derived from root, seed, flower, leaf, stem or pollen etc.).

In one aspect of the present invention, an evaluation can be conducted to determine whether a particular mRNA molecule is present. One or more of the nucleic acid molecules of the present invention, preferably one or more of the EST nucleic acid molecules or fragments thereof of the present invention are utilized to detect the presence or quantity of the mRNA species. Such molecules are then incubated with cell or tissue extracts of a plant under conditions sufficient to permit nucleic acid hybridization. The detection of double-stranded probe-mRNA hybrid molecules is indicative of the presence of the mRNA; the amount of such hybrid formed is proportional to the amount of mRNA. Thus, such probes may be used to ascertain the level and extent of the mRNA production in a plant's cells or tissues. Such nucleic acid hybridization may be conducted under quantitative conditions (thereby providing a numerical value of the amount of the mRNA present). Alternatively, the assay may be conducted as a qualitative assay that indicates either that the mRNA is present, or that its level exceeds a user set, predefined value.

A principle of *in situ* hybridization is that a labeled, single-stranded nucleic acid probe will hybridize to a complementary strand of cellular DNA or RNA and, under the appropriate conditions, these molecules will form a stable hybrid. When nucleic acid hybridization is combined with histological techniques, specific DNA or RNA sequences can be identified within a single cell. An advantage of *in situ* hybridization over more conventional techniques for the detection of nucleic acids is that it allows an investigator to determine the precise spatial population (Angerer *et al., Dev. Biol. 101*:477-484 (1984), the entirety of which is herein incorporated by reference; Angerer *et al., Dev. Biol. 112*:157-166 (1985), the entirety of which is herein incorporated by reference; Dixon *et al., EMBO J. 10*:1317-1324 (1991), the entirety of which is herein incorporated by reference). *In situ* hybridization may be used to measure the

steady-state level of RNA accumulation. It is a sensitive technique and RNA sequences present in as few as 5-10 copies per cell can be detected (Hardin *et al.*, *J. Mol. Biol. 202*:417-431 (1989), the entirety of which is herein incorporated by reference). A number of protocols have been devised for *in situ* hybridization, each with tissue preparation, hybridization and washing conditions (Meyerowitz, *Plant Mol. Biol. Rep. 5*:242-250 (1987), the entirety of which is herein incorporated by reference; Cox and Goldberg, In: *Plant Molecular Biology: A Practical Approach,* Shaw (ed.), pp 1-35, IRL Press, Oxford (1988), the entirety of which is herein incorporated by reference; Raikhel *et al., In situ RNA hybridization in plant tissues*, In: *Plant Molecular Biology Manual*, vol. B9:1-32, Kluwer Academic Publisher, Dordrecht, Belgium (1989), the entirety of which is herein incorporated by reference).

In situ hybridization also allows for the localization of proteins within a tissue or cell (Wilkinson, *In Situ Hybridization,* Oxford University Press, Oxford (1992), the entirety of which is herein incorporated by reference; Langdale, *In Situ Hybridization* In: *The Maize Handbook,* Freeling and Walbot (eds.), pp 165-179, Springer-Verlag, New York (1994), the entirety of which is herein incorporated by reference). It is understood that one or more of the molecules of the present invention, preferably one or more of the EST nucleic acid molecules or fragments thereof of the present invention or one or more of the antibodies of the present invention may be utilized to detect the level or pattern of a sucrose pathway protein or mRNA thereof by *in situ* hybridization.

Fluorescent *in situ* hybridization allows the localization of a particular DNA sequence along a chromosome which is useful, among other uses, for gene mapping, following chromosomes in hybrid lines or detecting chromosomes with translocations, transversions or deletions. *In situ* hybridization has been used to identify chromosomes in several plant species

(Griffor *et al., Plant Mol. Biol. 17*:101-109 (1991), the entirety of which is herein incorporated by reference; Gustafson *et al., Proc. Natl. Acad. Sci. (U.S.A.) 87*:1899-1902 (1990), herein incorporated by reference; Mukai and Gill, *Genome 34*:448-452 (1991), the entirety of which is herein incorporated by reference; Schwarzacher and Heslop-Harrison, *Genome 34*:317-323 (1991); Wang *et al., Jpn. J. Genet. 66*:313-316 (1991), the entirety of which is herein incorporated by reference; Parra and Windle, *Nature Genetics 5*:17-21 (1993), the entirety of which is herein incorporated by reference). It is understood that the nucleic acid molecules of the present invention may be used as probes or markers to localize sequences along a chromosome.

Another method to localize the expression of a molecule is tissue printing. Tissue printing provides a way to screen, at the same time on the same membrane many tissue sections from different plants or different developmental stages. Tissue-printing procedures utilize films designed to immobilize proteins and nucleic acids. In essence, a freshly cut section of a tissue is pressed gently onto nitrocellulose paper, nylon membrane or polyvinylidene difluoride membrane. Such membranes are commercially available (*e.g.* Millipore, Bedford, Massachusetts U.S.A.). The contents of the cut cell transfer onto the membrane and the contents and are immobilized to the membrane. The immobilized contents form a latent print that can be visualized with appropriate probes. When a plant tissue print is made on nitrocellulose paper, the cell walls leave a physical print that makes the anatomy visible without further treatment (Varner and Taylor, *Plant Physiol. 91*:31-33 (1989), the entirety of which is herein incorporated by reference).

Tissue printing on substrate films is described by Daoust, *Exp. Cell Res. 12*:203-211 (1957), the entirety of which is herein incorporated by reference, who detected amylase, protease, ribonuclease and deoxyribonuclease in animal tissues using starch, gelatin and agar films. These

techniques can be applied to plant tissues (Yomo and Taylor, *Planta 112*:35-43 (1973); the entirety of which is herein incorporated by reference; Harris and Chrispeels, *Plant Physiol.* 56:292-299 (1975), the entirety of which is herein incorporated by reference). Advances in membrane technology have increased the range of applications of Daoust's tissue-printing techniques allowing (Cassab and Varner, *J. Cell. Biol. 105*:2581-2588 (1987), the entirety of which is herein incorporated by reference) the histochemical localization of various plant enzymes and deoxyribonuclease on nitrocellulose paper and nylon (Spruce *et al.*, *Phytochemistry 26:*2901-2903 (1987), the entirety of which is herein incorporated by reference; Barres *et al., Neuron 5:*527-544 (1990), the entirety of which is herein incorporated by reference; Reid and Pont-Lezica, *Tissue Printing: Tools for the Study of Anatomy, Histochemistry and Gene Expression,* Academic Press, New York, New York (1992), the entirety of which is herein incorporated by reference; Reid *et al., Plant Physiol. 93:*160-165 (1990), the entirety of which is herein incorporated by reference; Ye *et al.*, *Plant J. 1:*175-183 (1991), the entirety of which is herein incorporated by reference).

It is understood that one or more of the molecules of the present invention, preferably one or more of the EST nucleic acid molecules or fragments thereof of the present invention or one or more of the antibodies of the present invention may be utilized to detect the presence or quantity of a sucrose pathway protein by tissue printing.

Further it is also understood that any of the nucleic acid molecules of the present invention may be used as marker nucleic acids and or probes in connection with methods that require probes or marker nucleic acids. As used herein, a probe is an agent that is utilized to determine an attribute or feature (e.g. presence or absence, location, correlation, etc.) of a molecule, cell, tissue or plant. As used herein, a marker nucleic acid is a nucleic acid molecule

that is utilized to determine an attribute or feature (*e.g.,* presence or absence, location, correlation, etc.) or a molecule, cell, tissue or plant.

A microarray-based method for high-throughput monitoring of plant gene expression may be utilized to measure gene-specific hybridization targets. This 'chip'-based approach involves using microarrays of nucleic acid molecules as gene-specific hybridization targets to quantitatively measure expression of the corresponding plant genes (Schena *et al.*, *Science 270*:467-470 (1995), the entirety of which is herein incorporated by reference; Shalon, Ph.D. Thesis, Stanford University (1996), the entirety of which is herein incorporated by reference). Every nucleotide in a large sequence can be queried at the same time. Hybridization can be used to efficiently analyze nucleotide sequences.

Several microarray methods have been described. One method compares the sequences to be analyzed by hybridization to a set of oligonucleotides representing all possible subsequences (Bains and Smith, *J. Theor. Biol. 135*:303-307 (1989), the entirety of which is herein incorporated by reference). A second method hybridizes the sample to an array of oligonucleotide or cDNA molecules. An array consisting of oligonucleotides complementary to subsequences of a target sequence can be used to determine the identity of a target sequence, measure its amount and detect differences between the target and a reference sequence. Nucleic acid molecules microarrays may also be screened with protein molecules or fragments thereof to determine nucleic acid molecules that specifically bind protein molecules or fragments thereof.

The microarray approach may be used with polypeptide targets (U.S. Patent No. 5,445,934; U.S. Patent No: 5,143,854; U.S. Patent No. 5,079,600; U.S. Patent No. 4,923,901, all of which are herein incorporated by reference in their entirety). Essentially, polypeptides are synthesized on a substrate (microarray) and these polypeptides can be screened with either

protein molecules or fragments thereof or nucleic acid molecules in order to screen for either protein molecules or fragments thereof or nucleic acid molecules that specifically bind the target polypeptides. (Fodor *et al.*, *Science 251*:767-773 (1991), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acid molecules or protein or fragments thereof of the present invention may be utilized in a microarray based method.

In a preferred embodiment of the present invention microarrays may be prepared that comprise nucleic acid molecules where such nucleic acid molecules encode at least one, preferably at least two, more preferably at least three or preferably at least four, preferably at least five, preferably at least six, preferably at least seven, preferably at least eight, preferably at least nine, preferably at least ten, preferably at least eleven, preferably at least twelve, preferably at least thirteen, preferably at least fourteen preferably at least fifteen sucrose pathway enzymes. In a preferred embodiment the nucleic acid molecules are selected from the group consisting of a nucleic acid molecule that encodes a maize or a soybean triose phosphate isomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme

or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or fragment thereof, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or fragment thereof and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or fragment thereof.

Site directed mutagenesis may be utilized to modify nucleic acid sequences, particularly as it is a technique that allows one or more of the amino acids encoded by a nucleic acid molecule to be altered (e.g. a threonine to be replaced by a methionine). Three basic methods for site directed mutagenesis are often employed. These are cassette mutagenesis (Wells *et al.*, *Gene 34*:315-323 (1985), the entirety of which is herein incorporated by reference), primer extension (Gilliam *et al.*, *Gene 12*:129-137 (1980), the entirety of which is herein incorporated by reference; Zoller and Smith, *Methods Enzymol. 100*:468-500 (1983), the entirety of which is herein incorporated by reference; Dalbadie-McFarland *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 79*:6409-6413 (1982), the entirety of which is herein incorporated by reference) and methods based upon PCR (Scharf *et al.*, *Science 233*:1076-1078 (1986), the entirety of which is herein incorporated by reference; Higuchi *et al.*, *Nucleic Acids Res. 16*:7351-7367 (1988), the entirety of which is herein incorporated by reference). Site directed mutagenesis approaches are also described in European Patent 0 385 962, the entirety of which is herein incorporated by reference; European Patent 0 359 472, the entirety of which is herein incorporated by reference;

and PCT Patent Application WO 93/07278, the entirety of which is herein incorporated by reference.

Site directed mutagenesis strategies have been applied to plants for both *in vitro* as well as *in vivo* site directed mutagenesis (Lanz *et al.*, *J. Biol. Chem. 266*:9971-9976 (1991), the entirety of which is herein incorporated by reference; Kovgan and Zhdanov, *Biotekhnologiya 5*:148-154; No. 207160n, Chemical Abstracts 110:225 (1989), the entirety of which is herein incorporated by reference; Ge *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:4037-4041 (1989), the entirety of which is herein incorporated by reference; Zhu *et al.*, *J. Biol. Chem. 271*:18494-18498 (1996), the entirety of which is herein incorporated by reference; Chu *et al.*, *Biochemistry 33*:6150-6157 (1994), the entirety of which is herein incorporated by reference; Small *et al.*, *EMBO J. 11*:1291-1296 (1992), the entirety of which is herein incorporated by reference; Cho *et al.*, *Mol. Biotechnol. 8*:13-16 (1997), the entirety of which is herein incorporated by reference; Kita *et al.*, *J. Biol. Chem. 271*:26529-26535 (1996), the entirety of which is herein incorporated by reference, Jin *et al.*, *Mol. Microbiol. 7*:555-562 (1993), the entirety of which is herein incorporated by reference; Hatfield and Vierstra, *J. Biol. Chem. 267*:14799-14803 (1992), the entirety of which is herein incorporated by reference; Zhao *et al.*, *Biochemistry 31*:5093-5099 (1992), the entirety of which is herein incorporated by reference).

Any of the nucleic acid molecules of the present invention may either be modified by site directed mutagenesis or used as, for example, nucleic acid molecules that are used to target other nucleic acid molecules for modification. It is understood that mutants with more than one altered nucleotide can be constructed using techniques that practitioners are familiar with such as isolating restriction fragments and ligating such fragments into an expression vector (*see,* for

example, Sambrook *et al.*, *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Press (1989)).

Sequence-specific DNA-binding proteins play a role in the regulation of transcription. The isolation of recombinant cDNAs encoding these proteins facilitates the biochemical analysis of their structural and functional properties. Genes encoding such DNA-binding proteins have been isolated using classical genetics (Vollbrecht *et al., Nature 350*: 241-243 (1991), the entirety of which is herein incorporated by reference) and molecular biochemical approaches, including the screening of recombinant cDNA libraries with antibodies (Landschulz *et al., Genes Dev. 2*:786-800 (1988), the entirety of which is herein incorporated by reference) or DNA probes (Bodner *et al.*, *Cell 55*:505-518 (1988), the entirety of which is herein incorporated by reference). In addition, an *in situ* screening procedure has been used and has facilitated the isolation of sequence-specific DNA-binding proteins from various plant species (Gilmartin *et al., Plant Cell 4*:839-849 (1992), the entirety of which is herein incorporated by reference; Schindler *et al., EMBO J. 11*:1261-1273 (1992), the entirety of which is herein incorporated by reference). An *in situ* screening protocol does not require the purification of the protein of interest (Vinson *et al.*, *Genes Dev. 2*:801-806 (1988), the entirety of which is herein incorporated by reference; Singh *et al., Cell 52*:415-423 (1988), the entirety of which is herein incorporated by reference).

Two steps may be employed to characterize DNA-protein interactions. The first is to identify promoter fragments that interact with DNA-binding proteins, to titrate binding activity, to determine the specificity of binding and to determine whether a given DNA-binding activity can interact with related DNA sequences (Sambrook *et al., Molecular Cloning: A Laboratory Manual*, 2nd edition, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York

(1989)). Electrophoretic mobility-shift assay is a widely used assay. The assay provides a rapid and sensitive method for detecting DNA-binding proteins based on the observation that the mobility of a DNA fragment through a nondenaturing, low-ionic strength polyacrylamide gel is retarded upon association with a DNA-binding protein (Fried and Crother, *Nucleic Acids Res. 9*:6505-6525 (1981), the entirety of which is herein incorporated by reference). When one or more specific binding activities have been identified, the exact sequence of the DNA bound by the protein may be determined. Several procedures for characterizing protein/DNA-binding sites are used, including methylation and ethylation interference assays (Maxam and Gilbert, *Methods Enzymol. 65*:499-560 (1980), the entirety of which is herein incorporated by reference; Wissman and Hillen, *Methods Enzymol. 208*:365-379 (1991), the entirety of which is herein incorporated by reference), footprinting techniques employing DNase I (Galas and Schmitz, *Nucleic Acids Res. 5*:3157-3170 (1978), the entirety of which is herein incorporated by reference), 1,10-phenanthroline-copper ion methods (Sigman *et al., Methods Enzymol. 208*:414-433 (1991), the entirety of which is herein incorporated by reference) and hydroxyl radicals methods (Dixon *et al., Methods Enzymol. 208*:414-433 (1991), the entirety of which is herein incorporated by reference). It is understood that one or more of the nucleic acid molecules of the present invention may be utilized to identify a protein or fragment thereof that specifically binds to a nucleic acid molecule of the present invention. It is also understood that one or more of the protein molecules or fragments thereof of the present invention may be utilized to identify a nucleic acid molecule that specifically binds to it.

A two-hybrid system is based on the fact that many cellular functions are carried out by proteins, such as transcription factors, that interact (physically) with one another. Two-hybrid systems have been used to probe the function of new proteins (Chien *et al., Proc. Natl. Acad. Sci.*

(U.S.A.) 88:9578-9582 (1991) the entirety of which is herein incorporated by reference; Durfee *et al., Genes Dev. 7*:555-569 (1993) the entirety of which is herein incorporated by reference; Choi *et al., Cell 78*:499-512 (1994), the entirety of which is herein incorporated by reference; Kranz *et al., Genes Dev. 8*:313-327 (1994), the entirety of which is herein incorporated by reference).

Interaction mating techniques have facilitated a number of two-hybrid studies of protein-protein interaction. Interaction mating has been used to examine interactions between small sets of tens of proteins (Finley and Brent, *Proc. Natl. Acad. Sci. (U.S.A.) 91*:12098-12984 (1994), the entirety of which is herein incorporated by reference), larger sets of hundreds of proteins (Bendixen *et al., Nucl. Acids Res. 22*:1778-1779 (1994), the entirety of which is herein incorporated by reference) and to comprehensively map proteins encoded by a small genome (Bartel *et al., Nature Genetics 12*:72-77 (1996), the entirety of which is herein incorporated by reference). This technique utilizes proteins fused to the DNA-binding domain and proteins fused to the activation domain. They are expressed in two different haploid yeast strains of opposite mating type and the strains are mated to determine if the two proteins interact. Mating occurs when haploid yeast strains come into contact and result in the fusion of the two haploids into a diploid yeast strain. An interaction can be determined by the activation of a two-hybrid reporter gene in the diploid strain. An advantage of this technique is that it reduces the number of yeast transformations needed to test individual interactions. It is understood that the protein-protein interactions of protein or fragments thereof of the present invention may be investigated using the two-hybrid system and that any of the nucleic acid molecules of the present invention that encode such proteins or fragments thereof may be used to transform yeast in the two-hybrid system.

(a) Plant Constructs and Plant Transformants

One or more of the nucleic acid molecules of the present invention may be used in plant transformation or transfection. Exogenous genetic material may be transferred into a plant cell and the plant cell regenerated into a whole, fertile or sterile plant. Exogenous genetic material is any genetic material, whether naturally occurring or otherwise, from any source that is capable of being inserted into any organism. Such genetic material may be transferred into either monocotyledons and dicotyledons including, but not limited to maize (pp 63-69), soybean (pp 50-60), *Arabidopsis* (p 45), phaseolus (pp 47-49), peanut (pp 49-50), alfalfa (p 60), wheat (pp 69-71), rice (pp 72-79), oat (pp 80-81), sorghum (p 83), rye (p 84), tritordeum (p 84), millet (p85), fescue (p 85), perennial ryegrass (p 86), sugarcane (p87), cranberry (p101), papaya (pp 101-102), banana (p 103), banana (p 103), muskmelon (p 104), apple (p 104), cucumber (p 105), dendrobium (p 109), gladiolus (p 110), chrysanthemum (p 110), liliacea (p 111), cotton (pp113-114), eucalyptus (p 115), sunflower (p 118), canola (p 118), turfgrass (p121), sugarbeet (p 122), coffee (p 122) and dioscorea (p 122), (Christou, In: *Particle Bombardment for Genetic Engineering of Plants,* Biotechnology Intelligence Unit. Academic Press, San Diego, California (1996), the entirety of which is herein incorporated by reference).

Transfer of a nucleic acid that encodes for a protein can result in overexpression of that protein in a transformed cell or transgenic plant. One or more of the proteins or fragments thereof encoded by nucleic acid molecules of the present invention may be overexpressed in a transformed cell or transformed plant. Particularly, any of the sucrose pathway proteins or fragments thereof may be overexpressed in a transformed cell or transgenic plant. Such overexpression may be the result of transient or stable transfer of the exogenous genetic material.

Exogenous genetic material may be transferred into a plant cell and the plant cell by the use of a DNA vector or construct designed for such a purpose. Design of such a vector is

generally within the skill of the art (*See*, *Plant Molecular Biology: A Laboratory Manual*, Clark (ed.), Springier, New York (1997), the entirety of which is herein incorporated by reference).

A construct or vector may include a plant promoter to express the protein or protein fragment of choice. A number of promoters which are active in plant cells have been described in the literature. These include the nopaline synthase (NOS) promoter (Ebert *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 84*:5745-5749 (1987), the entirety of which is herein incorporated by reference), the octopine synthase (OCS) promoter (which are carried on tumor-inducing plasmids of *Agrobacterium tumefaciens*), the caulimovirus promoters such as the cauliflower mosaic virus (CaMV) 19S promoter (Lawton *et al.*, *Plant Mol. Biol. 9*:315-324 (1987), the entirety of which is herein incorporated by reference) and the CAMV 35S promoter (Odell *et al.*, *Nature 313*:810-812 (1985), the entirety of which is herein incorporated by reference), the figwort mosaic virus 35S-promoter, the light-inducible promoter from the small subunit of ribulose-1,5-bis-phosphate carboxylase (ssRUBISCO), the Adh promoter (Walker *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 84*:6624-6628 (1987), the entirety of which is herein incorporated by reference), the sucrose synthase promoter (Yang *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 87*:4144-4148 (1990), the entirety of which is herein incorporated by reference), the R gene complex promoter (Chandler *et al.*, *The Plant Cell 1*:1175-1183 (1989), the entirety of which is herein incorporated by reference) and the chlorophyll a/b binding protein gene promoter, etc. These promoters have been used to create DNA constructs which have been expressed in plants; *see, e.g.*, PCT publication WO 84/02913, herein incorporated by reference in its entirety.

Promoters which are known or are found to cause transcription of DNA in plant cells can be used in the present invention. Such promoters may be obtained from a variety of sources such as plants and plant viruses. It is preferred that the particular promoter selected should be capable

of causing sufficient expression to result in the production of an effective amount of the sucrose pathway protein to cause the desired phenotype. In addition to promoters that are known to cause transcription of DNA in plant cells, other promoters may be identified for use in the current invention by screening a plant cDNA library for genes which are selectively or preferably expressed in the target tissues or cells.

For the purpose of expression in source tissues of the plant, such as the leaf, seed, root or stem, it is preferred that the promoters utilized in the present invention have relatively high expression in these specific tissues. For this purpose, one may choose from a number of promoters for genes with tissue- or cell-specific or -enhanced expression. Examples of such promoters reported in the literature include the chloroplast glutamine synthetase GS2 promoter from pea (Edwards *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 87*:3459-3463 (1990), herein incorporated by reference in its entirety), the chloroplast fructose-1,6-biphosphatase (FBPase) promoter from wheat (Lloyd *et al.*, *Mol. Gen. Genet. 225*:209-216 (1991), herein incorporated by reference in its entirety), the nuclear photosynthetic ST-LS1 promoter from potato (Stockhaus *et al.*, *EMBO J. 8*:2445-2451 (1989), herein incorporated by reference in its entirety), the serine/threonine kinase (PAL) promoter and the glucoamylase (CHS) promoter from *Arabidopsis thaliana*. Also reported to be active in photosynthetically active tissues are the ribulose-1,5-bisphosphate carboxylase (RbcS) promoter from eastern larch (*Larix laricina*), the promoter for the *cab* gene, cab6, from pine (Yamamoto *et al.*, *Plant Cell Physiol. 35*:773-778 (1994), herein incorporated by reference in its entirety), the promoter for the Cab-1 gene from wheat (Fejes *et al.*, *Plant Mol. Biol. 15*:921-932 (1990), herein incorporated by reference in its entirety), the promoter for the CAB-1 gene from spinach (Lubberstedt *et al.*, *Plant Physiol. 104*:997-1006 (1994), herein incorporated by reference in its entirety), the promoter for the cab1R gene from

rice (Luan *et al.*, *Plant Cell. 4*:971-981 (1992), the entirety of which is herein incorporated by reference), the pyruvate, orthophosphate dikinase (PPDK) promoter from maize (Matsuoka *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 90*: 9586-9590 (1993), herein incorporated by reference in its entirety), the promoter for the tobacco Lhcb1*2 gene (Cerdan *et al.*, *Plant Mol. Biol. 33*:245-255 (1997), herein incorporated by reference in its entirety), the *Arabidopsis thaliana* SUC2 sucrose-H+ symporter promoter (Truernit *et al.*, *Planta. 196*:564-570 (1995), herein incorporated by reference in its entirety) and the promoter for the thylakoid membrane proteins from spinach (psaD, psaF, psaE, PC, FNR, atpC, atpD, cab, rbcS). Other promoters for the chlorophyll a/b-binding proteins may also be utilized in the present invention, such as the promoters for LhcB gene and PsbP gene from white mustard (*Sinapis alba*; Kretsch *et al.*, *Plant Mol. Biol. 28*:219-229 (1995), the entirety of which is herein incorporated by reference).

For the purpose of expression in sink tissues of the plant, such as the tuber of the potato plant, the fruit of tomato, or the seed of maize, wheat, rice and barley, it is preferred that the promoters utilized in the present invention have relatively high expression in these specific tissues. A number of promoters for genes with tuber-specific or -enhanced expression are known, including the class I patatin promoter (Bevan *et al.*, *EMBO J. 8*:1899-1906 (1986); Jefferson *et al.*, *Plant Mol. Biol. 14*:995-1006 (1990), both of which are herein incorporated by reference in its entirety), the promoter for the potato tuber ADPGPP genes, both the large and small subunits, the sucrose synthase promoter (Salanoubat and Belliard, *Gene. 60*:47-56 (1987), Salanoubat and Belliard, *Gene. 84*:181-185 (1989), both of which are incorporated by reference in their entirety), the promoter for the major tuber proteins including the 22 kd protein complexes and proteinase inhibitors (Hannapel, *Plant Physiol. 101*:703-704 (1993), herein incorporated by reference in its entirety), the promoter for the granule bound starch synthase gene (GBSS)

(Visser *et al.*, *Plant Mol. Biol. 17*:691-699 (1991), herein incorporated by reference in its entirety) and other class I and II patatins promoters (Koster-Topfer *et al.*, *Mol Gen Genet. 219*:390-396 (1989); Mignery *et al.*, *Gene. 62*:27-44 (1988), both of which are herein incorporated by reference in their entirety).

Other promoters can also be used to express a sucrose pathway protein or fragment thereof in specific tissues, such as seeds or fruits. The promoter for β-conglycinin (Chen *et al.*, *Dev. Genet. 10*: 112-122 (1989), herein incorporated by reference in its entirety) or other seed-specific promoters such as the napin and phaseolin promoters, can be used. The zeins are a group of storage proteins found in maize endosperm. Genomic clones for zein genes have been isolated (Pedersen *et al.*, *Cell 29*:1015-1026 (1982), herein incorporated by reference in its entirety) and the promoters from these clones, including the 15 kD, 16 kD, 19 kD, 22 kD, 27 kD and genes, could also be used. Other promoters known to function, for example, in maize include the promoters for the following genes: *waxy, Brittle, Shrunken 2*, Branching enzymes I and II, starch synthases, debranching enzymes, oleosins, glutelins and sucrose synthases. A particularly preferred promoter for maize endosperm expression is the promoter for the glutelin gene from rice, more particularly the Osgt-1 promoter (Zheng *et al.*, *Mol. Cell Biol. 13*:5829-5842 (1993), herein incorporated by reference in its entirety). Examples of promoters suitable for expression in wheat include those promoters for the ADPglucose pyrosynthase (ADPGPP) subunits, the granule bound and other starch synthase, the branching and debranching enzymes, the embryogenesis-abundant proteins, the gliadins and the glutenins. Examples of such promoters in rice include those promoters for the ADPGPP subunits, the granule bound and other starch synthase, the branching enzymes, the debranching enzymes, sucrose synthases and the

glutelins. A particularly preferred promoter is the promoter for rice glutelin, Osgt-1. Examples of such promoters for barley include those for the ADPGPP subunits, the granule bound and other starch synthase, the branching enzymes, the debranching enzymes, sucrose synthases, the hordeins, the embryo globulins and the aleurone specific proteins.

Root specific promoters may also be used. An example of such a promoter is the promoter for the acid chitinase gene (Samac *et al.*, *Plant Mol. Biol. 25*:587-596 (1994), the entirety of which is herein incorporated by reference). Expression in root tissue could also be accomplished by utilizing the root specific subdomains of the CaMV35S promoter that have been identified (Lam *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 86*:7890-7894 (1989), herein incorporated by reference in its entirety). Other root cell specific promoters include those reported by Conkling *et al.* (Conkling *et al.*, *Plant Physiol. 93*:1203-1211 (1990), the entirety of which is herein incorporated by reference).

Additional promoters that may be utilized are described, for example, in U.S. Patent Nos. 5,378,619; 5,391,725; 5,428,147; 5,447,858; 5,608,144; 5,608,144; 5,614,399; 5,633,441; 5,633,435; and 4,633,436, all of which are herein incorporated in their entirety. In addition, a tissue specific enhancer may be used (Fromm *et al.*, *The Plant Cell 1*:977-984 (1989), the entirety of which is herein incorporated by reference).

Constructs or vectors may also include with the coding region of interest a nucleic acid sequence that acts, in whole or in part, to terminate transcription of that region. For example, such sequences have been isolated including the Tr7 3' sequence and the NOS 3' sequence (Ingelbrecht *et al.*, *The Plant Cell 1*:671-680 (1989), the entirety of which is herein incorporated by reference; Bevan *et al.*, *Nucleic Acids Res. 11*:369-385 (1983), the entirety of which is herein incorporated by reference), or the like.

A vector or construct may also include regulatory elements. Examples of such include the Adh intron 1 (Callis *et al.*, *Genes and Develop. 1*:1183-1200 (1987), the entirety of which is herein incorporated by reference), the sucrose synthase intron (Vasil *et al.*, Plant Physiol. 91:1575-1579 (1989), the entirety of which is herein incorporated by reference) and the TMV omega element (Gallie *et al.*, *The Plant Cell 1*:301-311 (1989), the entirety of which is herein incorporated by reference). These and other regulatory elements may be included when appropriate.

A vector or construct may also include a selectable marker. Selectable markers may also be used to select for plants or plant cells that contain the exogenous genetic material. Examples of such include, but are not limited to, a neo gene (Potrykus *et al.*, *Mol. Gen. Genet. 199*:183-188 (1985), the entirety of which is herein incorporated by reference) which codes for kanamycin resistance and can be selected for using kanamycin, G418, etc.; a bar gene which codes for bialaphos resistance; a mutant EPSP synthase gene (Hinchee *et al.*, *Bio/Technology 6*:915-922 (1988), the entirety of which is herein incorporated by reference) which encodes glyphosate resistance; a nitrilase gene which confers resistance to bromoxynil (Stalker *et al.*, *J. Biol. Chem. 263*:6310-6314 (1988), the entirety of which is herein incorporated by reference); a mutant acetolactate synthase gene (ALS) which confers imidazolinone or sulphonylurea resistance (European Patent Application 154,204 (Sept. 11, 1985), the entirety of which is herein incorporated by reference); and a methotrexate resistant DHFR gene (Thillet *et al.*, *J. Biol. Chem. 263*:12500-12508 (1988), the entirety of which is herein incorporated by reference).

A vector or construct may also include a transit peptide. Incorporation of a suitable chloroplast transit peptide may also be employed (European Patent Application Publication Number 0218571, the entirety of which is herein incorporated by reference). Translational

enhancers may also be incorporated as part of the vector DNA. DNA constructs could contain one or more 5' non-translated leader sequences which may serve to enhance expression of the gene products from the resulting mRNA transcripts. Such sequences may be derived from the promoter selected to express the gene or can be specifically modified to increase translation of the mRNA. Such regions may also be obtained from viral RNAs, from suitable eukaryotic genes, or from a synthetic gene sequence. For a review of optimizing expression of transgenes, see Koziel *et al., Plant Mol. Biol. 32*:393-405 (1996), the entirety of which is herein incorporated by reference.

A vector or construct may also include a screenable marker. Screenable markers may be used to monitor expression. Exemplary screenable markers include a β-glucuronidase or uidA gene (GUS) which encodes an enzyme for which various chromogenic substrates are known (Jefferson, *Plant Mol. Biol, Rep. 5:*387-405 (1987), the entirety of which is herein incorporated by reference; Jefferson *et al., EMBO J. 6:*3901-3907 (1987), the entirety of which is herein incorporated by reference); an R-locus gene, which encodes a product that regulates the production of anthocyanin pigments (red color) in plant tissues (Dellaporta *et al.*, Stadler Symposium *11*:263-282 (1988), the entirety of which is herein incorporated by reference); a β-lactamase gene (Sutcliffe *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 75*:3737-3741 (1978), the entirety of which is herein incorporated by reference), a gene which encodes an enzyme for which various chromogenic substrates are known (e.g., PADAC, a chromogenic cephalosporin); a luciferase gene (Ow *et al.*, *Science 234*:856-859 (1986), the entirety of which is herein incorporated by reference); a xylE gene (Zukowsky *et al.*, *Proc. Natl. Acad. Sci. (U.S.A.) 80*:1101-1105 (1983), the entirety of which is herein incorporated by reference) which encodes a

catechol diozygenase that can convert chromogenic catechols; an α-amylase gene (Ikatu *et al.*, *Bio/Technol.* *8*:241-242 (1990), the entirety of which is herein incorporated by reference); a tyrosinase gene (Katz *et al.*, *J. Gen. Microbiol.* *129*:2703-2714 (1983), the entirety of which is herein incorporated by reference) which encodes an enzyme capable of oxidizing tyrosine to DOPA and dopaquinone which in turn condenses to melanin; an α-galactosidase, which will turn a chromogenic α-galactose substrate.

Included within the terms "selectable or screenable marker genes" are also genes which encode a secretable marker whose secretion can be detected as a means of identifying or selecting for transformed cells. Examples include markers which encode a secretable antigen that can be identified by antibody interaction, or even secretable enzymes which can be detected catalytically. Secretable proteins fall into a number of classes, including small, diffusible proteins which are detectable, (*e.g.,* by ELISA), small active enzymes which are detectable in extracellular solution (*e.g.,* α-amylase, β-lactamase, phosphinothricin transferase), or proteins which are inserted or trapped in the cell wall (such as proteins which include a leader sequence such as that found in the expression unit of extension or tobacco PR-S). Other possible selectable and/or screenable marker genes will be apparent to those of skill in the art.

There are many methods for introducing transforming nucleic acid molecules into plant cells. Suitable methods are believed to include virtually any method by which nucleic acid molecules may be introduced into a cell, such as by *Agrobacterium* infection or direct delivery of nucleic acid molecules such as, for example, by PEG-mediated transformation, by electroporation or by acceleration of DNA coated particles, etc (Potrykus, *Ann. Rev. Plant Physiol. Plant Mol. Biol.* *42*:205-225 (1991), the entirety of which is herein incorporated by

reference; Vasil, *Plant Mol. Biol. 25*:925-937 (1994), the entirety of which is herein incorporated by reference). For example, electroporation has been used to transform maize protoplasts (Fromm *et al.*, *Nature 312*:791-793 (1986), the entirety of which is herein incorporated by reference).

Other vector systems suitable for introducing transforming DNA into a host plant cell include but are not limited to binary artificial chromosome (BIBAC) vectors (Hamilton *et al.*, *Gene 200*:107-116 (1997), the entirety of which is herein incorporated by reference); and transfection with RNA viral vectors (Della-Cioppa *et al.*, *Ann. N.Y. Acad. Sci.* (1996), 792 (Engineering Plants for Commercial Products and Applications), 57-61, the entirety of which is herein incorporated by reference). Additional vector systems also include plant selectable YAC vectors such as those described in Mullen *et al.*, *Molecular Breeding 4*:449-457 (1988), the entireity of which is herein incorporated by reference).

Technology for introduction of DNA into cells is well known to those of skill in the art. Four general methods for delivering a gene into cells have been described: (1) chemical methods (Graham and van der Eb, *Virology* 54:536-539 (1973), the entirety of which is herein incorporated by reference); (2) physical methods such as microinjection (Capecchi, *Cell* 22:479-488 (1980), the entirety of which is herein incorporated by reference), electroporation (Wong and Neumann, *Biochem. Biophys. Res. Commun. 107*:584-587 (1982); Fromm *et al., Proc. Natl. Acad. Sci. (U.S.A.) 82*:5824-5828 (1985); U.S. Patent No. 5,384,253, all of which are herein incorporated in their entirety); and the gene gun (Johnston and Tang, *Methods Cell Biol. 43*:353-365 (1994), the entirety of which is herein incorporated by reference); (3) viral vectors (Clapp, *Clin. Perinatol. 20*:155-168 (1993); Lu *et al., J. Exp. Med. 178*:2089-2096 (1993); Eglitis and Anderson, *Biotechniques 6*:608-614 (1988), all of which are herein incorporated in their

entirety); and (4) receptor-mediated mechanisms (Curiel *et al., Hum. Gen. Ther. 3*:147-154 (1992), Wagner *et al., Proc. Natl. Acad. Sci. (USA) 89*:6099-6103 (1992), both of which are incorporated by reference in their entirety).

Acceleration methods that may be used include, for example, microprojectile bombardment and the like. One example of a method for delivering transforming nucleic acid molecules to plant cells is microprojectile bombardment. This method has been reviewed by Yang and Christou (eds.), *Particle Bombardment Technology for Gene Transfer*, Oxford Press, Oxford, England (1994), the entirety of which is herein incorporated by reference). Non-biological particles (microprojectiles) that may be coated with nucleic acids and delivered into cells by a propelling force. Exemplary particles include those comprised of tungsten, gold, platinum and the like.

A particular advantage of microprojectile bombardment, in addition to it being an effective means of reproducibly transforming monocots, is that neither the isolation of protoplasts (Cristou *et al., Plant Physiol. 87*:671-674 (1988), the entirety of which is herein incorporated by reference) nor the susceptibility of *Agrobacterium* infection are required. An illustrative embodiment of a method for delivering DNA into maize cells by acceleration is a biolistics α-particle delivery system, which can be used to propel particles coated with DNA through a screen, such as a stainless steel or Nytex screen, onto a filter surface covered with corn cells cultured in suspension. Gordon-Kamm *et al.,* describes the basic procedure for coating tungsten particles with DNA (Gordon-Kamm *et al., Plant Cell 2*:603-618 (1990), the entirety of which is herein incorporated by reference). The screen disperses the tungsten nucleic acid particles so that they are not delivered to the recipient cells in large aggregates. A particle

delivery system suitable for use with the present invention is the helium acceleration PDS-1000/He gun is available from Bio-Rad Laboratories (Bio-Rad, Hercules, California)(Sanford *et al.*, *Technique 3*:3-16 (1991), the entirety of which is herein incorporated by reference).

For the bombardment, cells in suspension may be concentrated on filters. Filters containing the cells to be bombarded are positioned at an appropriate distance below the microprojectile stopping plate. If desired, one or more screens are also positioned between the gun and the cells to be bombarded.

Alternatively, immature embryos or other target cells may be arranged on solid culture medium. The cells to be bombarded are positioned at an appropriate distance below the microprojectile stopping plate. If desired, one or more screens are also positioned between the acceleration device and the cells to be bombarded. Through the use of techniques set forth herein one may obtain up to 1000 or more foci of cells transiently expressing a marker gene. The number of cells in a focus which express the exogenous gene product 48 hours post-bombardment often range from one to ten and average one to three.

In bombardment transformation, one may optimize the pre-bombardment culturing conditions and the bombardment parameters to yield the maximum numbers of stable transformants. Both the physical and biological parameters for bombardment are important in this technology. Physical factors are those that involve manipulating the DNA/microprojectile precipitate or those that affect the flight and velocity of either the macro- or microprojectiles. Biological factors include all steps involved in manipulation of cells before and immediately after bombardment, the osmotic adjustment of target cells to help alleviate the trauma associated with bombardment and also the nature of the transforming DNA, such as linearized DNA or

intact supercoiled plasmids. It is believed that pre-bombardment manipulations are especially important for successful transformation of immature embryos.

In another alternative embodiment, plastids can be stably transformed. Methods disclosed for plastid transformation in higher plants include the particle gun delivery of DNA containing a selectable marker and targeting of the DNA to the plastid genome through homologous recombination (Svab *et al., Proc. Natl. Acad. Sci. (U.S.A.) 87*:8526-8530 (1990); Svab and Maliga, *Proc. Natl. Acad. Sci. (U.S.A.) 90:*913-917 (1993); Staub and Maliga, *EMBO J. 12:*601-606 (1993); U.S. Patents 5, 451,513 and 5,545,818, all of which are herein incorporated by reference in their entirety).

Accordingly, it is contemplated that one may wish to adjust various aspects of the bombardment parameters in small scale studies to fully optimize the conditions. One may particularly wish to adjust physical parameters such as gap distance, flight distance, tissue distance and helium pressure. One may also minimize the trauma reduction factors by modifying conditions which influence the physiological state of the recipient cells and which may therefore influence transformation and integration efficiencies. For example, the osmotic state, tissue hydration and the subculture stage or cell cycle of the recipient cells may be adjusted for optimum transformation. The execution of other routine adjustments will be known to those of skill in the art in light of the present disclosure.

Agrobacterium-mediated transfer is a widely applicable system for introducing genes into plant cells because the DNA can be introduced into whole plant tissues, thereby bypassing the need for regeneration of an intact plant from a protoplast. The use of *Agrobacterium*-mediated plant integrating vectors to introduce DNA into plant cells is well known in the art. See, for example the methods described by Fraley *et al., Bio/Technology 3*:629-635 (1985) and Rogers *et*

al., Methods Enzymol. 153:253-277 (1987), both of which are herein incorporated by reference in their entirety. Further, the integration of the Ti-DNA is a relatively precise process resulting in few rearrangements. The region of DNA to be transferred is defined by the border sequences and intervening DNA is usually inserted into the plant genome as described (Spielmann *et al., Mol. Gen. Genet. 205*:34 (1986), the entirety of which is herein incorporated by reference).

Modern *Agrobacterium* transformation vectors are capable of replication in E. *coli* as well as *Agrobacterium*, allowing for convenient manipulations as described (Klee *et al.,* In: *Plant DNA Infectious Agents*, Hohn and Schell (eds.), Springer-Verlag, New York, pp. 179-203 (1985), the entirety of which is herein incorporated by reference. Moreover, technological advances in vectors for *Agrobacterium*-mediated gene transfer have improved the arrangement of genes and restriction sites in the vectors to facilitate construction of vectors capable of expressing various polypeptide coding genes. The vectors described have convenient multi-linker regions flanked by a promoter and a polyadenylation site for direct expression of inserted polypeptide coding genes and are suitable for present purposes (Rogers *et al., Methods Enzymol. 153*:253-277 (1987)). In addition, *Agrobacterium* containing both armed and disarmed Ti genes can be used for the transformations. In those plant strains where *Agrobacterium*-mediated transformation is efficient, it is the method of choice because of the facile and defined nature of the gene transfer.

A transgenic plant formed using *Agrobacterium* transformation methods typically contains a single gene on one chromosome. Such transgenic plants can be referred to as being heterozygous for the added gene. More preferred is a transgenic plant that is homozygous for the added structural gene; *i.e.*, a transgenic plant that contains two added genes, one gene at the same locus on each chromosome of a chromosome pair. A homozygous transgenic plant can be obtained by sexually mating (selfing) an independent segregant transgenic plant that contains a

single added gene, germinating some of the seed produced and analyzing the resulting plants produced for the gene of interest.

It is also to be understood that two different transgenic plants can also be mated to produce offspring that contain two independently segregating added, exogenous genes. Selfing of appropriate progeny can produce plants that are homozygous for both added, exogenous genes that encode a polypeptide of interest. Back-crossing to a parental plant and out-crossing with a non-transgenic plant are also contemplated, as is vegetative propagation.

Transformation of plant protoplasts can be achieved using methods based on calcium phosphate precipitation, polyethylene glycol treatment, electroporation and combinations of these treatments (*See, for example*, Potrykus *et al., Mol. Gen. Genet. 205*:193-200 (1986); Lorz *et al., Mol. Gen. Genet. 199*:178 (1985); Fromm *et al., Nature 319*:791 (1986); Uchimiya *et al., Mol. Gen. Genet. 204*:204 (1986); Marcotte *et al., Nature 335*:454-457 (1988), all of which are herein incorporated by reference in their entirety).

Application of these systems to different plant strains depends upon the ability to regenerate that particular plant strain from protoplasts. Illustrative methods for the regeneration of cereals from protoplasts are described (Fujimura *et al., Plant Tissue Culture Letters 2*:74 (1985); Toriyama *et al., Theor Appl. Genet. 205*:34 (1986); Yamada *et al., Plant Cell Rep. 4*:85 (1986); Abdullah *et al., Biotechnolog 4*:1087 (1986), all of which are herein incorporated by reference in their entirety).

To transform plant strains that cannot be successfully regenerated from protoplasts, other ways to introduce DNA into intact cells or tissues can be utilized. For example, regeneration of cereals from immature embryos or explants can be effected as described (Vasil, *Biotechnology 6*:397 (1988), the entirety of which is herein incorporated by reference). In addition, "particle

gun" or high-velocity microprojectile technology can be utilized (Vasil *et al., Bio/Technology 10*:667 (1992), the entirety of which is herein incorporated by reference).

Using the latter technology, DNA is carried through the cell wall and into the cytoplasm on the surface of small metal particles as described (Klein *et al., Nature 328:*70 (1987); Klein *et al., Proc. Natl. Acad. Sci. (U.S.A.) 85*:8502-8505 (1988); McCabe *et al., Bio/Technology 6:923* (1988), all of which are herein incorporated by reference in their entirety). The metal particles penetrate through several layers of cells and thus allow the transformation of cells within tissue explants.

Other methods of cell transformation can also be used and include but are not limited to introduction of DNA into plants by direct DNA transfer into pollen (Zhou *et al., Methods Enzymol. 101:*433 (1983); Hess *et al., Intern Rev. Cytol. 107:*367 (1987); Luo *et al., Plant Mol Biol. Reporter 6:*165 (1988), all of which are herein incorporated by reference in their entirety), by direct injection of DNA into reproductive organs of a plant (Pena *et al., Nature 325*:274 (1987), the entirety of which is herein incorporated by reference), or by direct injection of DNA into the cells of immature embryos followed by the rehydration of desiccated embryos (Neuhaus *et al., Theor. Appl. Genet. 75*:30 (1987), the entirety of which is herein incorporated by reference).

The regeneration, development and cultivation of plants from single plant protoplast transformants or from various transformed explants is well known in the art (Weissbach and Weissbach, In: *Methods for Plant Molecular Biology*, Academic Press, San Diego, CA, (1988), the entirety of which is herein incorporated by reference). This regeneration and growth process typically includes the steps of selection of transformed cells, culturing those individualized cells through the usual stages of embryonic development through the rooted plantlet stage. Transgenic

embryos and seeds are similarly regenerated. The resulting transgenic rooted shoots are thereafter planted in an appropriate plant growth medium such as soil.

The development or regeneration of plants containing the foreign, exogenous gene that encodes a protein of interest is well known in the art. Preferably, the regenerated plants are self-pollinated to provide homozygous transgenic plants. Otherwise, pollen obtained from the regenerated plants is crossed to seed-grown plants of agronomically important lines. Conversely, pollen from plants of these important lines is used to pollinate regenerated plants. A transgenic plant of the present invention containing a desired polypeptide is cultivated using methods well known to one skilled in the art.

There are a variety of methods for the regeneration of plants from plant tissue. The particular method of regeneration will depend on the starting plant tissue and the particular plant species to be regenerated.

Methods for transforming dicots, primarily by use of *Agrobacterium tumefaciens* and obtaining transgenic plants have been published for cotton (U.S. Patent No. 5,004,863; U.S. Patent No. 5,159,135; U.S. Patent No. 5,518,908, all of which are herein incorporated by reference in their entirety); soybean (U.S. Patent No. 5,569,834; U.S. Patent No. 5,416,011; McCabe *et. al., Biotechnology 6:*923 (1988); Christou *et al., Plant Physiol. 87*:671-674 (1988); all of which are herein incorporated by reference in their entirety); *Brassica* (U.S. Patent No. 5,463,174, the entirety of which is herein incorporated by reference); peanut (Cheng *et al., Plant Cell Rep. 15:*653-657 (1996), McKently *et al., Plant Cell Rep. 14:*699-703 (1995), all of which are herein incorporated by reference in their entirety); papaya; and pea (Grant *et al., Plant Cell Rep. 15*:254-258 (1995), the entirety of which is herein incorporated by reference).

Transformation of monocotyledons using electroporation, particle bombardment and *Agrobacterium* have also been reported. Transformation and plant regeneration have been achieved in asparagus (Bytebier *et al., Proc. Natl. Acad. Sci. (USA) 84*:5354 (1987), the entirety of which is herein incorporated by reference); barley (Wan and Lemaux, *Plant Physiol 104*:37 (1994), the entirety of which is herein incorporated by reference); maize (Rhodes *et al., Science 240*:204 (1988); Gordon-Kamm *et al., Plant Cell* 2:603-618 (1990); Fromm *et al., Bio/Technology 8*:833 (1990); Koziel *et al., Bio/Technology 11*:194 (1993); Armstrong *et al., Crop Science 35*:550-557 (1995); all of which are herein incorporated by reference in their entirety); oat (Somers *et al., Bio/Technology 10*:1589 (1992), the entirety of which is herein incorporated by reference); orchard grass (Horn *et al., Plant Cell Rep. 7*:469 (1988), the entirety of which is herein incorporated by reference); rice (Toriyama *et al., Theor Appl. Genet. 205*:34 (1986); Part *et al., Plant Mol. Biol. 32*:1135-1148 (1996); Abedinia *et al., Aust. J. Plant Physiol. 24*:133-141 (1997); Zhang and Wu, *Theor. Appl. Genet. 76*:835 (1988); Zhang *et al., Plant Cell Rep. 7*:379 (1988); Battraw and Hall, *Plant Sci. 86*:191-202 (1992); Christou *et al., Bio/Technology 9*:957 (1991), all of which are herein incorporated by reference in their entirety); rye (De la Pena *et al., Nature 325*:274 (1987), the entirety of which is herein incorporated by reference); sugarcane (Bower and Birch, *Plant J. 2*:409 (1992), the entirety of which is herein incorporated by reference); tall fescue (Wang *et al., Bio/Technology 10*:691 (1992), the entirety of which is herein incorporated by reference) and wheat (Vasil *et al., Bio/Technology 10*:667 (1992), the entirety of which is herein incorporated by reference; U.S. Patent No. 5,631,152, the entirety of which is herein incorporated by reference.)

Assays for gene expression based on the transient expression of cloned nucleic acid constructs have been developed by introducing the nucleic acid molecules into plant cells by

polyethylene glycol treatment, electroporation, or particle bombardment (Marcotte *et al., Nature 335*:454-457 (1988), the entirety of which is herein incorporated by reference; Marcotte *et al., Plant Cell 1*:523-532 (1989), the entirety of which is herein incorporated by reference; McCarty *et al., Cell 66:*895-905 (1991), the entirety of which is herein incorporated by reference; Hattori *et al., Genes Dev. 6:*609-618 (1992), the entirety of which is herein incorporated by reference; Goff *et al., EMBO J. 9:*2517-2522 (1990), the entirety of which is herein incorporated by reference). Transient expression systems may be used to functionally dissect gene constructs (*see generally*, Mailga *et al., Methods in Plant Molecular Biology,* Cold Spring Harbor Press (1995)).

Any of the nucleic acid molecules of the present invention may be introduced into a plant cell in a permanent or transient manner in combination with other genetic elements such as vectors, promoters, enhancers etc. Further, any of the nucleic acid molecules of the present invention may be introduced into a plant cell in a manner that allows for overexpression of the protein or fragment thereof encoded by the nucleic acid molecule.

Cosuppression is the reduction in expression levels, usually at the level of RNA, of a particular endogenous gene or gene family by the expression of a homologous sense construct that is capable of transcribing mRNA of the same strandedness as the transcript of the endogenous gene (Napoli *et al., Plant Cell 2*:279-289 (1990), the entirety of which is herein incorporated by reference; van der Krol *et al., Plant Cell 2*:291-299 (1990), the entirety of which is herein incorporated by reference). Cosuppression may result from stable transformation with a single copy nucleic acid molecule that is homologous to a nucleic acid sequence found with the cell (Prolls and Meyer, *Plant J. 2:*465-475 (1992), the entirety of which is herein incorporated by reference) or with multiple copies of a nucleic acid molecule that is homologous to a nucleic acid

sequence found with the cell (Mittlesten *et al., Mol. Gen. Genet. 244:*325-330 (1994), the entirety of which is herein incorporated by reference). Genes, even though different, linked to homologous promoters may result in the cosuppression of the linked genes (Vaucheret, *C.R. Acad. Sci. III 316:*1471-1483 (1993), the entirety of which is herein incorporated by reference).

This technique has, for example, been applied to generate white flowers from red petunia and tomatoes that do not ripen on the vine. Up to 50% of petunia transformants that contained a sense copy of the glucoamylase (CHS) gene produced white flowers or floral sectors; this was as a result of the post-transcriptional loss of mRNA encoding CHS (Flavell, *Proc. Natl. Acad. Sci. (U.S.A.) 91*:3490-3496 (1994), the entirety of which is herein incorporated by reference); van Blokland *et al., Plant J. 6*:861-877 (1994), the entirety of which is herein incorporated by reference). Cosuppression may require the coordinate transcription of the transgene and the endogenous gene and can be reset by a developmental control mechanism (Jorgensen, *Trends Biotechnol. 8*:340-344 (1990), the entirety of which is herein incorporated by reference; Meins and Kunz, In: *Gene Inactivation and Homologous Recombination in Plants*, Paszkowski (ed.), pp. 335-348, Kluwer Academic, Netherlands (1994), the entirety of which is herein incorporated by reference).

It is understood that one or more of the nucleic acids of the present invention may be introduced into a plant cell and transcribed using an appropriate promoter with such transcription resulting in the cosuppression of an endogenous sucrose pathway protein.

Antisense approaches are a way of preventing or reducing gene function by targeting the genetic material (Mol *et al., FEBS Lett. 268*:427-430 (1990), the entirety of which is herein incorporated by reference). The objective of the antisense approach is to use a sequence complementary to the target gene to block its expression and create a mutant cell line or

organism in which the level of a single chosen protein is selectively reduced or abolished. Antisense techniques have several advantages over other 'reverse genetic' approaches. The site of inactivation and its developmental effect can be manipulated by the choice of promoter for antisense genes or by the timing of external application or microinjection. Antisense can manipulate its specificity by selecting either unique regions of the target gene or regions where it shares homology to other related genes (Hiatt *et al.,* In: *Genetic Engineering,* Setlow (ed.), Vol. 11, New York: Plenum 49-63 (1989), the entirety of which is herein incorporated by reference).

The principle of regulation by antisense RNA is that RNA that is complementary to the target mRNA is introduced into cells, resulting in specific RNA:RNA duplexes being formed by base pairing between the antisense substrate and the target mRNA (Green *et al.*, *Annu. Rev. Biochem.* *55*:569-597 (1986), the entirety of which is herein incorporated by reference). Under one embodiment, the process involves the introduction and expression of an antisense gene sequence. Such a sequence is one in which part or all of the normal gene sequences are placed under a promoter in inverted orientation so that the 'wrong' or complementary strand is transcribed into a noncoding antisense RNA that hybridizes with the target mRNA and interferes with its expression (Takayama and Inouye, *Crit. Rev. Biochem. Mol. Biol.* *25*:155-184 (1990), the entirety of which is herein incorporated by reference). An antisense vector is constructed by standard procedures and introduced into cells by transformation, transfection, electroporation, microinjection, infection, etc. The type of transformation and choice of vector will determine whether expression is transient or stable. The promoter used for the antisense gene may influence the level, timing, tissue, specificity, or inducibility of the antisense inhibition.

It is understood that the activity of a sucrose pathway protein in a plant cell may be reduced or depressed by growing a transformed plant cell containing a nucleic acid molecule whose non-transcribed strand encodes a sucrose pathway protein or fragment thereof.

Antibodies have been expressed in plants (Hiatt *et al., Nature 342:*76-78 (1989), the entirety of which is herein incorporated by reference; Conrad and Fielder, *Plant Mol. Biol. 26:*1023-1030 (1994), the entirety of which is herein incorporated by reference). Cytoplamsic expression of a scFv (single-chain Fv antibodies) has been reported to delay infection by artichoke mottled crinkle virus. Transgenic plants that express antibodies directed against endogenous proteins may exhibit a physiological effect (Philips *et al., EMBO J. 16:*4489-4496 (1997), the entirety of which is herein incorporated by reference; Marion-Poll, *Trends in Plant Science 2:*447-448 (1997), the entirety of which is herein incorporated by reference). For example, expressed anti-abscisic antibodies have been reported to result in a general perturbation of seed development (Philips *et al., EMBO J. 16:* 4489-4496 (1997)).

Antibodies that are catalytic may also be expressed in plants (abzymes). The principle behind abzymes is that since antibodies may be raised against many molecules, this recognition ability can be directed toward generating antibodies that bind transition states to force a chemical reaction forward (Persidas, *Nature Biotechnology 15:*1313-1315 (1997), the entirety of which is herein incorporated by reference; Baca *et al., Ann. Rev. Biophys. Biomol. Struct. 26:*461-493 (1997), the entirety of which is herein incorporated by reference). The catalytic abilities of abzymes may be enhanced by site directed mutagenesis. Examples of abzymes are, for example, set forth in U.S. Patent No: 5,658,753; U.S. Patent No. 5,632,990; U.S. Patent No. 5,631,137; U.S. Patent 5,602,015; U.S. Patent No. 5,559,538; U.S. Patent No. 5,576,174; U.S. Patent No.

5,500,358; U.S. Patent 5,318,897; U.S. Patent No. 5,298,409; U.S. Patent No. 5,258,289 and U.S. Patent No. 5,194,585, all of which are herein incorporated in their entirety.

It is understood that any of the antibodies of the present invention may be expressed in plants and that such expression can result in a physiological effect. It is also understood that any of the expressed antibodies may be catalytic.

(b) Fungal Constructs and Fungal Transformants

The present invention also relates to a fungal recombinant vector comprising exogenous genetic material. The present invention also relates to a fungal cell comprising a fungal recombinant vector. The present invention also relates to methods for obtaining a recombinant fungal host cell comprising introducing into a fungal host cell exogenous genetic material.

Exogenous genetic material may be transferred into a fungal cell. In a preferred embodiment the exogenous genetic material includes a nucleic acid molecule of the present invention having a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragments of either or other nucleic acid molecule of the present invention. The fungal recombinant vector may be any vector which can be conveniently subjected to recombinant DNA procedures. The choice of a vector will typically depend on the compatibility of the vector with the fungal host cell into which the vector is to be introduced. The vector may be a linear or a closed circular plasmid. The vector system may be a single vector or plasmid or two or more vectors or plasmids which together contain the total DNA to be introduced into the genome of the fungal host.

The fungal vector may be an autonomously replicating vector, *i.e.*, a vector which exists as an extrachromosomal entity, the replication of which is independent of chromosomal replication, *e.g.*, a plasmid, an extrachromosomal element, a minichromosome, or an artificial

chromosome. The vector may contain any means for assuring self-replication. Alternatively, the vector may be one which, when introduced into the fungal cell, is integrated into the genome and replicated together with the chromosome(s) into which it has been integrated. For integration, the vector may rely on the nucleic acid sequence of the vector for stable integration of the vector into the genome by homologous or nonhomologous recombination. Alternatively, the vector may contain additional nucleic acid sequences for directing integration by homologous recombination into the genome of the fungal host. The additional nucleic acid sequences enable the vector to be integrated into the host cell genome at a precise location(s) in the chromosome(s). To increase the likelihood of integration at a precise location, there should be preferably two nucleic acid sequences which individually contain a sufficient number of nucleic acids, preferably 400bp to 1500bp, more preferably 800bp to 1000bp, which are highly homologous with the corresponding target sequence to enhance the probability of homologous recombination. These nucleic acid sequences may be any sequence that is homologous with a target sequence in the genome of the fungal host cell and, furthermore, may be non-encoding or encoding sequences.

For autonomous replication, the vector may further comprise an origin of replication enabling the vector to replicate autonomously in the host cell in question. Examples of origin of replications for use in a yeast host cell are the 2 micron origin of replication and the combination of CEN3 and ARS 1. Any origin of replication may be used which is compatible with the fungal host cell of choice.

The fungal vectors of the present invention preferably contain one or more selectable markers which permit easy selection of transformed cells. A selectable marker is a gene the product of which provides, for example biocide or viral resistance, resistance to heavy metals,

prototrophy to auxotrophs and the like. The selectable marker may be selected from the group including, but not limited to, *amdS* (acetamidase), *argB* (ornithine carbamoyltransferase), *bar* (phosphinothricin acetyltransferase), hygB (hygromycin phosphotransferase), *niaD* (nitrate reductase), *pyrG* (orotidine-5'-phosphate decarboxylase) and *sC* (sulfate adenyltransferase) and *trpC* (anthranilate synthase). Preferred for use in an *Aspergillus* cell are the *amdS* and *pyrG* markers of *Aspergillus nidulans* or *Aspergillus oryzae* and the bar marker of *Streptomyces hygroscopicus*. Furthermore, selection may be accomplished by co-transformation, *e.g.*, as described in WO 91/17243, the entirety of which is herein incorporated by reference. A nucleic acid sequence of the present invention may be operably linked to a suitable promoter sequence. The promoter sequence is a nucleic acid sequence which is recognized by the fungal host cell for expression of the nucleic acid sequence. The promoter sequence contains transcription and translation control sequences which mediate the expression of the protein or fragment thereof.

A promoter may be any nucleic acid sequence which shows transcriptional activity in the fungal host cell of choice and may be obtained from genes encoding polypeptides either homologous or heterologous to the host cell. Examples of suitable promoters for directing the transcription of a nucleic acid construct of the invention in a filamentous fungal host are promoters obtained from the genes encoding *Aspergillus oryzae* TAKA amylase, *Rhizomucor miehei* aspartic proteinase, *Aspergillus niger* neutral alpha-amylase, *Aspergillus niger* acid stable alpha-amylase, *Aspergillus niger* or *Aspergillus awamori* glucoamylase (glaA), *Rhizomucor miehei* lipase, *Aspergillus oryzae* alkaline protease, *Aspergillus oryzae* triose phosphate isomerase, *Aspergillus nidulans* acetamidase and hybrids thereof. In a yeast host, a useful promoter is the *Saccharomyces cerevisiae* enolase (eno-1) promoter. Particularly preferred promoters are the TAKA amylase, NA2-tpi (a hybrid of the promoters from the genes encoding

Aspergillus niger neutral alpha -amylase and *Aspergillus oryzae* triose phosphate isomerase) and glaA promoters.

A protein or fragment thereof encoding nucleic acid molecule of the present invention may also be operably linked to a terminator sequence at its 3' terminus. The terminator sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any terminator which is functional in the fungal host cell of choice may be used in the present invention, but particularly preferred terminators are obtained from the genes encoding *Aspergillus oryzae* TAKA amylase, *Aspergillus niger* glucoamylase, *Aspergillus nidulans* anthranilate synthase, *Aspergillus niger* alpha-glucosidase and *Saccharomyces cerevisiae* enolase.

A protein or fragment thereof encoding nucleic acid molecule of the present invention may also be operably linked to a suitable leader sequence. A leader sequence is a nontranslated region of a mRNA which is important for translation by the fungal host. The leader sequence is operably linked to the 5' terminus of the nucleic acid sequence encoding the protein or fragment thereof. The leader sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any leader sequence which is functional in the fungal host cell of choice may be used in the present invention, but particularly preferred leaders are obtained from the genes encoding *Aspergillus oryzae* TAKA amylase and *Aspergillus oryzae* triose phosphate isomerase.

A polyadenylation sequence may also be operably linked to the 3' terminus of the nucleic acid sequence of the present invention. The polyadenylation sequence is a sequence which when transcribed is recognized by the fungal host to add polyadenosine residues to transcribed mRNA. The polyadenylation sequence may be native to the nucleic acid sequence encoding the protein or

fragment thereof or may be obtained from foreign sources. Any polyadenylation sequence which is functional in the fungal host of choice may be used in the present invention, but particularly preferred polyadenylation sequences are obtained from the genes encoding *Aspergillus oryzae* TAKA amylase, *Aspergillus niger* glucoamylase, *Aspergillus nidulans* anthranilate synthase and *Aspergillus niger* alpha-glucosidase.

To avoid the necessity of disrupting the cell to obtain the protein or fragment thereof and to minimize the amount of possible degradation of the expressed protein or fragment thereof within the cell, it is preferred that expression of the protein or fragment thereof gives rise to a product secreted outside the cell. To this end, a protein or fragment thereof of the present invention may be linked to a signal peptide linked to the amino terminus of the protein or fragment thereof. A signal peptide is an amino acid sequence which permits the secretion of the protein or fragment thereof from the fungal host into the culture medium. The signal peptide may be native to the protein or fragment thereof of the invention or may be obtained from foreign sources. The 5' end of the coding sequence of the nucleic acid sequence of the present invention may inherently contain a signal peptide coding region naturally linked in translation reading frame with the segment of the coding region which encodes the secreted protein or fragment thereof. Alternatively, the 5' end of the coding sequence may contain a signal peptide coding region which is foreign to that portion of the coding sequence which encodes the secreted protein or fragment thereof. The foreign signal peptide may be required where the coding sequence does not normally contain a signal peptide coding region. Alternatively, the foreign signal peptide may simply replace the natural signal peptide to obtain enhanced secretion of the desired protein or fragment thereof. The foreign signal peptide coding region may be obtained from a glucoamylase or an amylase gene from an *Aspergillus* species, a lipase or proteinase gene

from *Rhizomucor miehei*, the gene for the alpha-factor from *Saccharomyces cerevisiae*, or the calf preprochymosin gene. An effective signal peptide for fungal host cells is the *Aspergillus oryzae* TAKA amylase signal, *Aspergillus niger* neutral amylase signal, the *Rhizomucor miehei* aspartic proteinase signal, the *Humicola lanuginosus* cellulase signal, or the *Rhizomucor miehei* lipase signal. However, any signal peptide capable of permitting secretion of the protein or fragment thereof in a fungal host of choice may be used in the present invention.

A protein or fragment thereof encoding nucleic acid molecule of the present invention may also be linked to a propeptide coding region. A propeptide is an amino acid sequence found at the amino terminus of aproprotein or proenzyme. Cleavage of the propeptide from the proprotein yields a mature biochemically active protein. The resulting polypeptide is known as a propolypeptide or proenzyme (or a zymogen in some cases). Propolypeptides are generally inactive and can be converted to mature active polypeptides by catalytic or autocatalytic cleavage of the propeptide from the propolypeptide or proenzyme. The propeptide coding region may be native to the protein or fragment thereof or may be obtained from foreign sources. The foreign propeptide coding region may be obtained from the *Saccharomyces cerevisiae* alpha-factor gene or *Myceliophthora thermophila* laccase gene (WO 95/33836, the entirety of which is herein incorporated by reference).

The procedures used to ligate the elements described above to construct the recombinant expression vector of the present invention are well known to one skilled in the art (see, for example, Sambrook *et al.*, *Molecular Cloning, A Laboratory Manual*, 2nd ed., Cold Spring Harbor, N.Y., (1989)).

The present invention also relates to recombinant fungal host cells produced by the methods of the present invention which are advantageously used with the recombinant vector of

the present invention. The cell is preferably transformed with a vector comprising a nucleic acid sequence of the invention followed by integration of the vector into the host chromosome. The choice of fungal host cells will to a large extent depend upon the gene encoding the protein or fragment thereof and its source. The fungal host cell may, for example, be a yeast cell or a filamentous fungal cell.

"Yeast" as used herein includes *Ascosporogenous* yeast (*Endomycetales*), *Basidiosporogenous* yeast and yeast belonging to the *Fungi Imperfecti* (*Blastomycetes*). The *Ascosporogenous* yeasts are divided into the families *Spermophthoraceae* and *Saccharomycetaceae*. The latter is comprised of four subfamilies, *Schizosaccharomycoideae* (for example, genus *Schizosaccharomyces*), *Nadsonioideae, Lipomycoideae* and *Saccharomycoideae* (for example, genera *Pichia, Kluyveromyces* and *Saccharomyces*). The *Basidiosporogenous* yeasts include the genera *Leucosporidim, Rhodosporidium, Sporidiobolus, Filobasidium* and *Filobasidiella*. Yeast belonging to the *Fungi Imperfecti* are divided into two families, *Sporobolomycetaceae* (for example, genera *Sorobolomyces* and *Bullera*) and *Cryptococcaceae* (for example, genus *Candida*). Since the classification of yeast may change in the future, for the purposes of this invention, yeast shall be defined as described in Biology and Activities of Yeast (Skinner *et al.*, *Soc. App. Bacteriol. Symposium Series* No. 9, (1980), the entirety of which is herein incorporated by reference). The biology of yeast and manipulation of yeast genetics are well known in the art (*see,* for example, *Biochemistry and Genetics of Yeast,* Bacil *et al.* (ed.), 2nd edition, 1987; *The Yeasts*, Rose and Harrison (eds.), 2nd ed., (1987); and *The Molecular Biology of the Yeast Saccharomyces*, Strathern *et al.* (eds.), (1981), all of which are herein incorporated by reference in their entirety).

"Fungi" as used herein includes the phyla *Ascomycota, Basidiomycota, Chytridiomycota* and *Zygomycota* (as defined by Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK; the entirety of which is herein incorporated by reference) as well as the *Oomycota* (as cited in Hawksworth *et al.,* In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK) and all mitosporic fungi (Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK). Representative groups of *Ascomycota* include, for example, *Neurospora, Eupenicillium* (= *Penicillium*), *Emericella* (= *Aspergillus*), *Eurotiun* (= *Aspergillus*) and the true yeasts listed above. Examples of *Basidiomycota* include mushrooms, rusts and smuts. Representative groups of *Chytridiomycota* include, for example, *Allomyces, Blastocladiella, Coelomomyces* and aquatic fungi. Representative groups of *Oomycota* include, for example, *Saprolegniomycetous* aquatic fungi (water molds) such as *Achlya.* Examples of mitosporic fungi include *Aspergillus, Penicilliun, Candida* and *Alternaria.* Representative groups of *Zygomycota* include, for example, *Rhizopus* and *Mucor.*

"Filamentous fungi" include all filamentous forms of the subdivision *Eumycota* and *Oomycota* (as defined by Hawksworth *et al.*, In: Ainsworth and Bisby's *Dictionary of The Fungi*, 8th edition, 1995, CAB International, University Press, Cambridge, UK). The filamentous fungi are characterized by a vegetative mycelium composed of chitin, cellulose, glucan, chitosan, mannan and other complex polysaccharides. Vegetative growth is by hyphal elongation and carbon catabolism is obligately aerobic. In contrast, vegetative growth by yeasts such as *Saccharomyces cerevisiae* is by budding of a unicellular thallus and carbon catabolism may be fermentative.

In one embodiment, the fungal host cell is a yeast cell. In a preferred embodiment, the yeast host cell is a cell of the species of *Candida, Kluyveromyces, Saccharomyces, Schizosaccharomyces, Pichia* and *Yarrowia.* In a preferred embodiment, the yeast host cell is a *Saccharomyces cerevisiae* cell, a *Saccharomyces carlsbergensis*, *Saccharomyces diastaticus* cell, a *Saccharomyces douglasii* cell, a *Saccharomyces kluyveri* cell, a *Saccharomyces norbensis* cell, or a *Saccharomyces oviformis* cell. In another preferred embodiment, the yeast host cell is a *Kluyveromyces lactis* cell. In another preferred embodiment, the yeast host cell is a *Yarrowia lipolytica* cell.

In another embodiment, the fungal host cell is a filamentous fungal cell. In a preferred embodiment, the filamentous fungal host cell is a cell of the species of, but not limited to, *Acremonium, Aspergillus, Fusarium, Humicola, Myceliophthora, Mucor, Neurospora, Penicillium, Thielavia, Tolypocladium* and *Trichoderma.* In a preferred embodiment, the filamentous fungal host cell is an *Aspergillus* cell. In another preferred embodiment, the filamentous fungal host cell is an *Acremonium* cell. In another preferred embodiment, the filamentous fungal host cell is a *Fusarium* cell. In another preferred embodiment, the filamentous fungal host cell is a *Humicola* cell. In another preferred embodiment, the filamentous fungal host cell is a *Myceliophthora* cell. In another even preferred embodiment, the filamentous fungal host cell is a *Mucor* cell. In another preferred embodiment, the filamentous fungal host cell is a *Neurospora* cell. In another preferred embodiment, the filamentous fungal host cell is a *Penicillium* cell. In another preferred embodiment, the filamentous fungal host cell is a *Thielavia* cell. In another preferred embodiment, the filamentous fungal host cell is a *Tolypocladiun* cell. In another preferred embodiment, the filamentous fungal host cell is a *Trichoderma* cell. In a preferred embodiment, the filamentous fungal host cell is an *Aspergillus*

oryzae cell, an *Aspergillus niger* cell, an *Aspergillus foetidus* cell, or an *Aspergillus japonicus* cell. In another preferred embodiment, the filamentous fungal host cell is a *Fusarium oxysporum* cell or a *Fusarium graminearum* cell. In another preferred embodiment, the filamentous fungal host cell is a *Humicola insolens* cell or a *Humicola lanuginosus* cell. In another preferred embodiment, the filamentous fungal host cell is a *Myceliophthora thermophila* cell. In a most preferred embodiment, the filamentous fungal host cell is a *Mucor miehei* cell. In a most preferred embodiment, the filamentous fungal host cell is a *Neurospora crassa* cell. In a most preferred embodiment, the filamentous fungal host cell is a *Penicillium purpurogenum* cell. In another most preferred embodiment, the filamentous fungal host cell is a *Thielavia terrestris* cell. In another most preferred embodiment, the *Trichoderma* cell is a *Trichoderma reesei* cell, a *Trichoderna viride* cell, a *Trichoderma longibrachiatum* cell, a *Trichoderma harzianum* cell, or a *Trichoderma koningii* cell. In a preferred embodiment, the fungal host cell is selected from an *A. nidulans* cell, an *A. niger* cell, an *A. oryzae* cell and an *A. sojae* cell. In a further preferred embodiment, the fungal host cell is an *A. nidulans* cell.

The recombinant fungal host cells of the present invention may further comprise one or more sequences which encode one or more factors that are advantageous in the expression of the protein or fragment thereof, for example, an activator (e.g., a trans-acting factor), a chaperone and a processing protease. The nucleic acids encoding one or more of these factors are preferably not operably linked to the nucleic acid encoding the protein or fragment thereof. An activator is a protein which activates transcription of a nucleic acid sequence encoding a polypeptide (Kudla *et al., EMBO* 9:1355-1364(1990); Jarai and Buxton, *Current Genetics* 26:2238-244(1994); Verdier, *Yeast 6*:271-297(1990), all of which are herein incorporated by reference in their entirety). The nucleic acid sequence encoding an activator may be obtained

from the genes encoding *Saccharomyces cerevisiae* heme activator protein 1 (hap1), *Saccharomyces cerevisiae* galactose metabolizing protein 4 (gal4) and *Aspergillus nidulans* ammonia regulation protein (areA). For further examples, see Verdier, *Yeast 6*:271-297 (1990); MacKenzie *et al., Journal of Gen. Microbiol. 139*:2295-2307 (1993), both of which are herein incorporated by reference in their entirety). A chaperone is a protein which assists another protein in folding properly (Hartl *et al., TIBS 19*:20-25 (1994); Bergeron *et al., TIBS* 19:124-128 (1994); Demolder *et al., J. Biotechnology* 32:179-189 (1994); Craig, *Science 260*:1902-1903(1993); Gething and Sambrook, *Nature* 355:33-45 (1992); Puig and Gilbert, *J Biol. Chem. 269*:7764-7771 (1994); Wang and Tsou, *FASEB Journal* 7:1515-11157 (1993); Robinson *et al.*, *Bio/Technology 1*:381-384 (1994), all of which are herein incorporated by reference in their entirety). The nucleic acid sequence encoding a chaperone may be obtained from the genes encoding *Aspergillus oryzae* protein disulphide isomerase, *Saccharomyces cerevisiae* calnexin, *Saccharomyces cerevisiae* BiP/GRP78 and *Saccharomyces cerevisiae* Hsp70. For further examples, *see* Gething and Sambrook, *Nature 355*:33-45 (1992); Hartl *et al., TIBS 19*:20-25 (1994). A processing protease is a protease that cleaves a propeptide to generate a mature biochemically active polypeptide (Enderlin and Ogrydziak, *Yeast 10*:67-79 (1994); Fuller *et al., Proc. Natl. Acad. Sci. (U.S.A.) 86*:1434-1438 (1989); Julius *et al., Cell 37*:1075-1089 (1984); Julius *et al., Cell 32*:839-852 (1983), all of which are incorporated by reference in their entirety). The nucleic acid sequence encoding a processing protease may be obtained from the genes encoding *Aspergillus niger* Kex2, *Saccharomyces cerevisiae* dipeptidylaminopeptidase, *Saccharomyces cerevisiae* Kex2 and *Yarrowia lipolytica* dibasic processing endoprotease (xpr6). Any factor that is functional in the fungal host cell of choice may be used in the present invention.

Fungal cells may be transformed by a process involving protoplast formation, transformation of the protoplasts and regeneration of the cell wall in a manner known per se. Suitable procedures for transformation of *Aspergillus* host cells are described in EP 238 023 and Yelton *et al., Proc. Natl. Acad. Sci. (U.S.A.) 81*:1470-1474 (1984), both of which are herein incorporated by reference in their entirety. A suitable method of transforming *Fusarium* species is described by Malardier *et al.*, *Gene 78:*147-156 (1989), the entirety of which is herein incorporated by reference. Yeast may be transformed using the procedures described by Becker and Guarente, In: Abelson and Simon, (eds.), *Guide to Yeast Genetics and Molecular Biology, Methods Enzymol.* Volume 194, pp 182-187, Academic Press, Inc., New York; Ito *et al.*, *J. Bacteriology 153*:163 (1983); Hinnen *et al., Proc. Natl. Acad. Sci. (U.S.A.) 75*:1920 (1978), all of which are herein incorporated by reference in their entirety.

The present invention also relates to methods of producing the protein or fragment thereof comprising culturing the recombinant fungal host cells under conditions conducive for expression of the protein or fragment thereof. The fungal cells of the present invention are cultivated in a nutrient medium suitable for production of the protein or fragment thereof using methods known in the art. For example, the cell may be cultivated by shake flask cultivation, small-scale or large-scale fermentation (including continuous, batch, fed-batch, or solid state fermentations) in laboratory or industrial fermentors performed in a suitable medium and under conditions allowing the protein or fragment thereof to be expressed and/or isolated. The cultivation takes place in a suitable nutrient medium comprising carbon and nitrogen sources and inorganic salts, using procedures known in the art (*see, e.g.*, Bennett and LaSure (eds.), *More Gene Manipulations in Fungi*, Academic Press, CA, (1991), the entirety of which is herein incorporated by reference). Suitable media are available from commercial suppliers or may be

prepared according to published compositions (*e.g.*, in catalogues of the American Type Culture Collection, Manassas, VA). If the protein or fragment thereof is secreted into the nutrient medium, a protein or fragment thereof can be recovered directly from the medium. If the protein or fragment thereof is not secreted, it is recovered from cell lysates.

The expressed protein or fragment thereof may be detected using methods known in the art that are specific for the particular protein or fragment. These detection methods may include the use of specific antibodies, formation of an enzyme product, or disappearance of an enzyme substrate. For example, if the protein or fragment thereof has enzymatic activity, an enzyme assay may be used. Alternatively, if polyclonal or monoclonal antibodies specific to the protein or fragment thereof are available, immunoassays may be employed using the antibodies to the protein or fragment thereof. The techniques of enzyme assay and immunoassay are well known to those skilled in the art.

The resulting protein or fragment thereof may be recovered by methods known in the arts. For example, the protein or fragment thereof may be recovered from the nutrient medium by conventional procedures including, but not limited to, centrifugation, filtration, extraction, spray-drying, evaporation, or precipitation. The recovered protein or fragment thereof may then be further purified by a variety of chromatographic procedures, e.g., ion exchange chromatography, gel filtration chromatography, affinity chromatography, or the like.

(c) Mammalian Constructs and Transformed Mammalian Cells

The present invention also relates to methods for obtaining a recombinant mammalian host cell, comprising introducing into a mammalian host cell exogenous genetic material. The present invention also relates to a mammalian cell comprising a mammalian recombinant vector. The present invention also relates to methods for obtaining a recombinant mammalian host cell,

comprising introducing into a mammalian cell exogenous genetic material. In a preferred embodiment the exogenous genetic material includes a nucleic acid molecule of the present invention having a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragments of either or other nucleic acid molecule of the present invention.

Mammalian cell lines available as hosts for expression are known in the art and include many immortalized cell lines available from the American Type Culture Collection (ATCC, Manassas, VA), such as HeLa cells, Chinese hamster ovary (CHO) cells, baby hamster kidney (BHK) cells and a number of other cell lines. Suitable promoters for mammalian cells are also known in the art and include viral promoters such as that from Simian Virus 40 (SV40) (Fiers *et al., Nature* 273:113 (1978), the entirety of which is herein incorporated by reference), Rous sarcoma virus (RSV), adenovirus (ADV) and bovine papilloma virus (BPV). Mammalian cells may also require terminator sequences and poly-A addition sequences. Enhancer sequences which increase expression may also be included and sequences which promote amplification of the gene may also be desirable (for example methotrexate resistance genes).

Vectors suitable for replication in mammalian cells may include viral replicons, or sequences which insure integration of the appropriate sequences encoding HCV epitopes into the host genome. For example, another vector used to express foreign DNA is vaccinia virus. In this case, for example, a nucleic acid molecule encoding a protein or fragment thereof is inserted into the vaccinia genome. Techniques for the insertion of foreign DNA into the vaccinia virus genome are known in the art and may utilize, for example, homologous recombination. Such heterologous DNA is generally inserted into a gene which is non-essential to the virus, for example, the thymidine kinase gene (tk), which also provides a selectable marker. Plasmid

vectors that greatly facilitate the construction of recombinant viruses have been described (*see*, for example, Mackett *et al*, *J Virol.* *49*:857 (1984); Chakrabarti *et al.*, *Mol. Cell. Biol.* *5*:3403 (1985); Moss, In: *Gene Transfer Vectors For Mammalian Cells* (Miller and Calos, eds., Cold Spring Harbor Laboratory, N.Y., p. 10, (1987); all of which are herein incorporated by reference in their entirety). Expression of the HCV polypeptide then occurs in cells or animals which are infected with the live recombinant vaccinia virus.

The sequence to be integrated into the mammalian sequence may be introduced into the primary host by any convenient means, which includes calcium precipitated DNA, spheroplast fusion, transformation, electroporation, biolistics, lipofection, microinjection, or other convenient means. Where an amplifiable gene is being employed, the amplifiable gene may serve as the selection marker for selecting hosts into which the amplifiable gene has been introduced. Alternatively, one may include with the amplifiable gene another marker, such as a drug resistance marker, e.g. neomycin resistance (G418 in mammalian cells), hygromycin in resistance etc., or an auxotrophy marker (HIS3, TRP1, LEU2, URA3, ADE2, LYS2, etc.) for use in yeast cells.

Depending upon the nature of the modification and associated targeting construct, various techniques may be employed for identifying targeted integration. Conveniently, the DNA may be digested with one or more restriction enzymes and the fragments probed with an appropriate DNA fragment which will identify the properly sized restriction fragment associated with integration.

One may use different promoter sequences, enhancer sequences, or other sequence which will allow for enhanced levels of expression in the expression host. Thus, one may combine an enhancer from one source, a promoter region from another source, a 5'- noncoding region

upstream from the initiation sucrose from the same or different source as the other sequences and the like. One may provide for an intron in the non-coding region with appropriate splice sites or for an alternative 3'- untranslated sequence or polyadenylation site. Depending upon the particular purpose of the modification, any of these sequences may be introduced, as desired.

Where selection is intended, the sequence to be integrated will have with it a marker gene, which allows for selection. The marker gene may conveniently be downstream from the target gene and may include resistance to a cytotoxic agent, e.g. antibiotics, heavy metals, or the like, resistance or susceptibility to HAT, gancyclovir, etc., complementation to an auxotrophic host, particularly by using an auxotrophic yeast as the host for the subject manipulations, or the like. The marker gene may also be on a separate DNA molecule, particularly with primary mammalian cells. Alternatively, one may screen the various transformants, due to the high efficiency of recombination in yeast, by using hybridization analysis, PCR, sequencing, or the like.

For homologous recombination, constructs can be prepared where the amplifiable gene will be flanked, normally on both sides with DNA homologous with the DNA of the target region. Depending upon the nature of the integrating DNA and the purpose of the integration, the homologous DNA will generally be within 100kb, usually 50kb, preferably about 25kb, of the transcribed region of the target gene, more preferably within 2kb of the target gene. Where modeling of the gene is intended, homology will usually be present proximal to the site of the mutation. The homologous DNA may include the 5'-upstream region outside of the transcriptional regulatory region or comprising any enhancer sequences, transcriptional initiation sequences, adjacent sequences, or the like. The homologous region may include a portion of the coding region, where the coding region may be comprised only of an open reading frame or

combination of exons and introns. The homologous region may comprise all or a portion of an intron, where all or a portion of one or more exons may also be present. Alternatively, the homologous region may comprise the 3'-region, so as to comprise all or a portion of the transcriptional termination region, or the region 3' of this region. The homologous regions may extend over all or a portion of the target gene or be outside the target gene comprising all or a portion of the transcriptional regulatory regions and/or the structural gene.

The integrating constructs may be prepared in accordance with conventional ways, where sequences may be synthesized, isolated from natural sources, manipulated, cloned, ligated, subjected to in vitro mutagenesis, primer repair, or the like. At various stages, the joined sequences may be cloned and analyzed by restriction analysis, sequencing, or the like. Usually during the preparation of a construct where various fragments are joined, the fragments, intermediate constructs and constructs will be carried on a cloning vector comprising a replication system functional in a prokaryotic host, e.g., *E. coli* and a marker for selection, e.g., biocide resistance, complementation to an auxotrophic host, etc. Other functional sequences may also be present, such as polylinkers, for ease of introduction and excision of the construct or portions thereof, or the like. A large number of cloning vectors are available such as pBR322, the pUC series, etc. These constructs may then be used for integration into the primary mammalian host.

In the case of the primary mammalian host, a replicating vector may be used. Usually, such vector will have a viral replication system, such as SV40, bovine papilloma virus, adenovirus, or the like. The linear DNA sequence vector may also have a selectable marker for identifying transfected cells. Selectable markers include the neo gene, allowing for selection

with G418, the herpes tk gene for selection with HAT medium, the gpt gene with mycophenolic acid, complementation of an auxotrophic host, etc.

The vector may or may not be capable of stable maintenance in the host. Where the vector is capable of stable maintenance, the cells will be screened for homologous integration of the vector into the genome of the host, where various techniques for curing the cells may be employed. Where the vector is not capable of stable maintenance, for example, where a temperature sensitive replication system is employed, one may change the temperature from the permissive temperature to the non-permissive temperature, so that the cells may be cured of the vector. In this case, only those cells having integration of the construct comprising the amplifiable gene and, when present, the selectable marker, will be able to survive selection.

Where a selectable marker is present, one may select for the presence of the targeting construct by means of the selectable marker. Where the selectable marker is not present, one may select for the presence of the construct by the amplifiable gene. For the neo gene or the herpes tk gene, one could employ a medium for growth of the transformants of about 0.1-1 mg/ml of G418 or may use HAT medium, respectively. Where DHFR is the amplifiable gene, the selective medium may include from about 0.01-0.5 M of methotrexate or be deficient in glycine-hypoxanthine-thymidine and have dialysed serum (GHT media).

The DNA can be introduced into the expression host by a variety of techniques that include calcium phosphate/DNA co-precipitates, microinjection of DNA into the nucleus, electroporation, yeast protoplast fusion with intact cells, transfection, polycations, e.g., polybrene, polyornithine, etc., or the like. The DNA may be single or double stranded DNA, linear or circular. The various techniques for transforming mammalian cells are well known (see Keown *et al.*, *Methods Enzymol.* (1989); Keown *et al.*, *Methods Enzymol.* *185*:527-537 (1990);

Mansour *et al., Nature 336*:348-352, (1988); all of which are herein incorporated by reference in their entirety).

(d) Insect Constructs and Transformed Insect Cells

The present invention also relates to an insect recombinant vectors comprising exogenous genetic material. The present invention also relates to an insect cell comprising an insect recombinant vector. The present invention also relates to methods for obtaining a recombinant insect host cell, comprising introducing into an insect cell exogenous genetic material. In a preferred embodiment the exogenous genetic material includes a nucleic acid molecule of the present invention having a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragments of either or other nucleic acid molecule of the present invention.

The insect recombinant vector may be any vector which can be conveniently subjected to recombinant DNA procedures and can bring about the expression of the nucleic acid sequence. The choice of a vector will typically depend on the compatibility of the vector with the insect host cell into which the vector is to be introduced. The vector may be a linear or a closed circular plasmid. The vector system may be a single vector or plasmid or two or more vectors or plasmids which together contain the total DNA to be introduced into the genome of the insect host. In addition, the insect vector may be an expression vector. Nucleic acid molecules can be suitably inserted into a replication vector for expression in the insect cell under a suitable promoter for insect cells. Many vectors are available for this purpose and selection of the appropriate vector will depend mainly on the size of the nucleic acid molecule to be inserted into the vector and the particular host cell to be transformed with the vector. Each vector contains various components depending on its function (amplification of DNA or expression of DNA) and

the particular host cell with which it is compatible. The vector components for insect cell transformation generally include, but are not limited to, one or more of the following: a signal sequence, origin of replication, one or more marker genes and an inducible promoter.

The insect vector may be an autonomously replicating vector, *i.e.,* a vector which exists as an extrachromosomal entity, the replication of which is independent of chromosomal replication, *e.g.,* a plasmid, an extrachromosomal element, a minichromosome, or an artificial chromosome. The vector may contain any means for assuring self-replication. Alternatively, the vector may be one which, when introduced into the insect cell, is integrated into the genome and replicated together with the chromosome(s) into which it has been integrated. For integration, the vector may rely on the nucleic acid sequence of the vector for stable integration of the vector into the genome by homologous or nonhomologous recombination. Alternatively, the vector may contain additional nucleic acid sequences for directing integration by homologous recombination into the genome of the insect host. The additional nucleic acid sequences enable the vector to be integrated into the host cell genome at a precise location(s) in the chromosome(s). To increase the likelihood of integration at a precise location, there should be preferably two nucleic acid sequences which individually contain a sufficient number of nucleic acids, preferably 400bp to 1500bp, more preferably 800bp to 1000bp, which are highly homologous with the corresponding target sequence to enhance the probability of homologous recombination. These nucleic acid sequences may be any sequence that is homologous with a target sequence in the genome of the insect host cell and, furthermore, may be non-encoding or encoding sequences.

Baculovirus expression vectors (BEVs) have become important tools for the expression of foreign genes, both for basic research and for the production of proteins with direct clinical

applications in human and veterinary medicine (Doerfler, *Curr. Top. Microbiol. Immunol.* *131*:51-68 (1968); Luckow and Summers, *Bio/Technology* *6*:47-55 (1988a); Miller, *Annual Review of Microbiol.* *42*:177-199 (1988); Summers, *Curr. Comm. Molecular Biology*, Cold Spring Harbor Press, Cold Spring Harbor, N.Y. (1988); all of which are herein incorporated by reference in their entirety). BEVs are recombinant insect viruses in which the coding sequence for a chosen foreign gene has been inserted behind a baculovirus promoter in place of the viral gene, e.g., polyhedrin (Smith and Summers, U.S. Pat. No., 4,745,051, the entirety of which is incorporated herein by reference).

The use of baculovirus vectors relies upon the host cells being derived from *Lepidopteran* insects such as *Spodoptera frugiperda* or *Trichoplusia ni*. The preferred *Spodoptera frugiperda* cell line is the cell line Sf9. The *Spodoptera frugiperda* Sf9 cell line was obtained from American Type Culture Collection (Manassas, VA.) and is assigned accession number ATCC CRL 1711 (Summers and Smith, *A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures,* Texas Ag. Exper. Station Bulletin No. 1555 (1988), the entirety of which is herein incorporated by reference). Other insect cell systems, such as the silkworm *B. mori* may also be used.

The proteins expressed by the BEVs are, therefore, synthesized, modified and transported in host cells derived from *Lepidopteran* insects. Most of the genes that have been inserted and produced in the baculovirus expression vector system have been derived from vertebrate species. Other baculovirus genes in addition to the polyhedrin promoter may be employed to advantage in a baculovirus expression system. These include immediate-early (alpha), delayed-early ( ), late ( ), or very late (delta), according to the phase of the viral infection during which they are expressed. The expression of these genes occurs sequentially, probably as the result of a

"cascade" mechanism of transcriptional regulation. (Guarino and Summers, *J. Virol.* *57*:563-571 (1986); Guarino and Summers, *J. Virol.* *61*:2091-2099 (1987); Guarino and Summers, *Virol.* *162*:444-451 (1988); all of which are herein incorporated by reference in their entirety).

Insect recombinant vectors are useful as intermediates for the infection or transformation of insect cell systems. For example, an insect recombinant vector containing a nucleic acid molecule encoding a baculovirus transcriptional promoter followed downstream by an insect signal DNA sequence is capable of directing the secretion of the desired biologically active protein from the insect cell. The vector may utilize a baculovirus transcriptional promoter region derived from any of the over 500 baculoviruses generally infecting insects, such as for example the Orders *Lepidoptera, Diptera, Orthoptera, Coleoptera and Hymenoptera*, including for example but not limited to the viral DNAs of *Autographa californica MNPV, Bombyx mori NPV, Trichoplusia ni MNPV, Rachiplusia ou MNPV or Galleria mellonella MNPV*, wherein said baculovirus transcriptional promoter is a baculovirus immediate-early gene IEl or IEN promoter; an immediate-early gene in combination with a baculovirus delayed-early gene promoter region selected from the group consisting of 39K and a *HindIII-k* fragment delayed-early gene; or a baculovirus late gene promoter. The immediate-early or delayed-early promoters can be enhanced with transcriptional enhancer elements. The insect signal DNA sequence may code for a signal peptide of a *Lepidopteran* adipokinetic hormone precursor or a signal peptide of the *Manduca sexta* adipokinetic hormone precursor (Summers, U.S. Patent No. 5,155,037; the entirety of which is herein incorporated by reference). Other insect signal DNA sequences include a signal peptide of the *Orthoptera Schistocerca gregaria* locust adipokinetic hormone precurser and the *Drosophila melanogaster* cuticle genes CP1, CP2, CP3 or CP4 or for an insect

signal peptide having substantially a similar chemical composition and function (Summers, U.S. Patent No. 5,155,037).

Insect cells are distinctly different from animal cells. Insects have a unique life cycle and have distinct cellular properties such as the lack of intracellular plasminogen activators in which are present in vertebrate cells. Another difference is the high expression levels of protein products ranging from 1 to greater than 500 mg/liter and the ease at which cDNA can be cloned into cells (Frasier, *In Vitro Cell. Dev. Biol. 25*:225 (1989); Summers and Smith, In: *A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures,* Texas Ag. Exper. Station Bulletin No. 1555 (1988), both of which are incorporated by reference in their entirety).

Recombinant protein expression in insect cells is achieved by viral infection or stable transformation. For viral infection, the desired gene is cloned into baculovirus at the site of the wild-type polyhedron gene (Webb and Summers, *Technique 2*:173 (1990); Bishop and Posse, *Adv. Gene Technol. 1*:55 (1990); both of which are incorporated by reference in their entirety). The polyhedron gene is a component of a protein coat in occlusions which encapsulate virus particles. Deletion or insertion in the polyhedron gene results the failure to form occlusion bodies. Occlusion negative viruses are morphologically different from occlusion positive viruses and enable one skilled in the art to identify and purify recombinant viruses.

The vectors of present invention preferably contain one or more selectable markers which permit easy selection of transformed cells. A selectable marker is a gene the product of which provides, for example biocide or viral resistance, resistance to heavy metals, prototrophy to auxotrophs and the like. Selection may be accomplished by co-transformation, *e.g.*, as described in WO 91/17243, a nucleic acid sequence of the present invention may be operably linked to a suitable promoter sequence. The promoter sequence is a nucleic acid sequence which is

recognized by the insect host cell for expression of the nucleic acid sequence. The promoter sequence contains transcription and translation control sequences which mediate the expression of the protein or fragment thereof. The promoter may be any nucleic acid sequence which shows transcriptional activity in the insect host cell of choice and may be obtained from genes encoding polypeptides either homologous or heterologous to the host cell.

For example, a nucleic acid molecule encoding a protein or fragment thereof may also be operably linked to a suitable leader sequence. A leader sequence is a nontranslated region of a mRNA which is important for translation by the fungal host. The leader sequence is operably linked to the 5' terminus of the nucleic acid sequence encoding the protein or fragment thereof. The leader sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any leader sequence which is functional in the insect host cell of choice may be used in the present invention.

A polyadenylation sequence may also be operably linked to the 3' terminus of the nucleic acid sequence of the present invention. The polyadenylation sequence is a sequence which when transcribed is recognized by the insect host to add polyadenosine residues to transcribed mRNA. The polyadenylation sequence may be native to the nucleic acid sequence encoding the protein or fragment thereof or may be obtained from foreign sources. Any polyadenylation sequence which is functional in the fungal host of choice may be used in the present invention.

To avoid the necessity of disrupting the cell to obtain the protein or fragment thereof and to minimize the amount of possible degradation of the expressed polypeptide within the cell, it is preferred that expression of the polypeptide gene gives rise to a product secreted outside the cell. To this end, the protein or fragment thereof of the present invention may be linked to a signal peptide linked to the amino terminus of the protein or fragment thereof. A signal peptide is an

amino acid sequence which permits the secretion of the protein or fragment thereof from the insect host into the culture medium. The signal peptide may be native to the protein or fragment thereof of the invention or may be obtained from foreign sources. The 5' end of the coding sequence of the nucleic acid sequence of the present invention may inherently contain a signal peptide coding region naturally linked in translation reading frame with the segment of the coding region which encodes the secreted protein or fragment thereof.

At present, a mode of achieving secretion of a foreign gene product in insect cells is by way of the foreign gene's native signal peptide. Because the foreign genes are usually from non-insect organisms, their signal sequences may be poorly recognized by insect cells and hence, levels of expression may be suboptimal. However, the efficiency of expression of foreign gene products seems to depend primarily on the characteristics of the foreign protein. On average, nuclear localized or non-structural proteins are most highly expressed, secreted proteins are intermediate and integral membrane proteins are the least expressed. One factor generally affecting the efficiency of the production of foreign gene products in a heterologous host system is the presence of native signal sequences (also termed presequences, targeting signals, or leader sequences) associated with the foreign gene. The signal sequence is generally coded by a DNA sequence immediately following (5' to 3') the translation start site of the desired foreign gene.

The expression dependence on the type of signal sequence associated with a gene product can be represented by the following example: If a foreign gene is inserted at a site downstream from the translational start site of the baculovirus polyhedrin gene so as to produce a fusion protein (containing the N-terminus of the polyhedrin structural gene), the fused gene is highly expressed. But less expression is achieved when a foreign gene is inserted in a baculovirus

expression vector immediately following the transcriptional start site and totally replacing the polyhedrin structural gene.

Insertions into the region -50 to -1 significantly alter (reduce) steady state transcription which, in turn, reduces translation of the foreign gene product. Use of the pVL941 vector optimizes transcription of foreign genes to the level of the polyhedrin gene transcription. Even though the transcription of a foreign gene may be optimal, optimal translation may vary because of several factors involving processing: signal peptide recognition, mRNA and ribosome binding, glycosylation, disulfide bond formation, sugar processing, oligomerization, for example.

The properties of the insect signal peptide are expected to be more optimal for the efficiency of the translation process in insect cells than those from vertebrate proteins. This phenomenon can generally be explained by the fact that proteins secreted from cells are synthesized as precursor molecules containing hydrophobic N-terminal signal peptides. The signal peptides direct transport of the select protein to its target membrane and are then cleaved by a peptidase on the membrane, such as the endoplasmic reticulum, when the protein passes through it.

Another exemplary insect signal sequence is the sequence encoding for Drosophila cuticle proteins such as CP1, CP2, CP3 or CP4 (Summers, U.S. Patent No. 5,278,050; the entirety of which is herein incorporated by reference). Most of a 9kb region of the Drosophila genome containing genes for the cuticle proteins has been sequenced. Four of the five cuticle genes contains a signal peptide coding sequence interrupted by a short intervening sequence (about 60 base pairs) at a conserved site. Conserved sequences occur in the 5' mRNA untranslated region, in the adjacent 35 base pairs of upstream flanking sequence and at -200 base pairs from the mRNA start position in each of the cuticle genes.

Standard methods of insect cell culture, cotransfection and preparation of plasmids are set forth in Summers and Smith (Summers and Smith, *A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures*, Texas Agricultural Experiment Station Bulletin No. 1555, Texas A&M University (1987)). Procedures for the cultivation of viruses and cells are described in Volkman and Summers, *J. Virol 19*:820-832 (1975) and Volkman *et al.*, *J. Virol 19*:820-832 (1976); both of which are herein incorporated by reference in their entirety.

(e) Bacterial Constructs and Transformed Bacterial Cells

The present invention also relates to a bacterial recombinant vector comprising exogenous genetic material. The present invention also relates to a bacteria cell comprising a bacterial recombinant vector. The present invention also relates to methods for obtaining a recombinant bacteria host cell, comprising introducing into a bacterial host cell exogenous genetic material.. In a preferred embodiment the exogenous genetic material includes a nucleic acid molecule of the present invention having a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814 or complements thereof or fragments of either or other nucleic acid molecule of the present invention.

The bacterial recombinant vector may be any vector which can be conveniently subjected to recombinant DNA procedures. The choice of a vector will typically depend on the compatibility of the vector with the bacterial host cell into which the vector is to be introduced. The vector may be a linear or a closed circular plasmid. The vector system may be a single vector or plasmid or two or more vectors or plasmids which together contain the total DNA to be introduced into the genome of the bacterial host. In addition, the bacterial vector may be an expression vector. Nucleic acid molecules encoding protein homologues or fragments thereof can, for example, be suitably inserted into a replicable vector for expression in the bacterium

under the control of a suitable promoter for bacteria. Many vectors are available for this purpose and selection of the appropriate vector will depend mainly on the size of the nucleic acid to be inserted into the vector and the particular host cell to be transformed with the vector. Each vector contains various components depending on its function (amplification of DNA or expression of DNA) and the particular host cell with which it is compatible. The vector components for bacterial transformation generally include, but are not limited to, one or more of the following: a signal sequence, an origin of replication, one or more marker genes and an inducible promoter.

In general, plasmid vectors containing replicon and control sequences that are derived from species compatible with the host cell are used in connection with bacterial hosts. The vector ordinarily carries a replication site, as well as marking sequences that are capable of providing phenotypic selection in transformed cells. For example, *E. coli* is typically transformed using pBR322, a plasmid derived from an *E. coli* species (see, e.g., Bolivar *et al.*, *Gene* 2:95 (1977); the entirety of which is herein incorporated by reference). pBR322 contains genes for ampicillin and tetracycline resistance and thus provides easy means for identifying transformed cells. The pBR322 plasmid, or other microbial plasmid or phage, also generally contains, or is modified to contain, promoters that can be used by the microbial organism for expression of the selectable marker genes.

Nucleic acid molecules encoding protein or fragments thereof may be expressed not only directly, but also as a fusion with another polypeptide, preferably a signal sequence or other polypeptide having a specific cleavage site at the N-terminus of the mature polypeptide. In general, the signal sequence may be a component of the vector, or it may be a part of the polypeptide DNA that is inserted into the vector. The heterologous signal sequence selected

should be one that is recognized and processed (i.e., cleaved by a signal peptidase) by the host cell. For bacterial host cells that do not recognize and process the native polypeptide signal sequence, the signal sequence is substituted by a bacterial signal sequence selected, for example, from the group consisting of the alkaline phosphatase, penicillinase, lpp, or heat-stable enterotoxin II leaders.

Both expression and cloning vectors contain a nucleic acid sequence that enables the vector to replicate in one or more selected host cells. Generally, in cloning vectors this sequence is one that enables the vector to replicate independently of the host chromosomal DNA and includes origins of replication or autonomously replicating sequences. Such sequences are well known for a variety of bacteria. The origin of replication from the plasmid pBR322 is suitable for most Gram-negative bacteria.

Expression and cloning vectors also generally contain a selection gene, also termed a selectable marker. This gene encodes a protein necessary for the survival or growth of transformed host cells grown in a selective culture medium. Host cells not transformed with the vector containing the selection gene will not survive in the culture medium. Typical selection genes encode proteins that (a) confer resistance to antibiotics or other toxins, e.g., ampicillin, neomycin, methotrexate, or tetracycline, (b) complement auxotrophic deficiencies, or (c) supply critical nutrients not available from complex media, e.g., the gene encoding D-alanine racemase for *Bacilli*. One example of a selection scheme utilizes a drug to arrest growth of a host cell. Those cells that are successfully transformed with a heterologous protein homologue or fragment thereof produce a protein conferring drug resistance and thus survive the selection regimen.

The expression vector for producing a protein or fragment thereof can also contains an inducible promoter that is recognized by the host bacterial organism and is operably linked to the

nucleic acid encoding, for example, the nucleic acid molecule encoding the protein homologue or fragment thereof of interest. Inducible promoters suitable for use with bacterial hosts include the -lactamase and lactose promoter systems (Chang *et al.*, *Nature275*:615 (1978); Goeddel *et al.*, *Nature 281*:544 (1979); both of which are herein incorporated by reference in their entirety), the arabinose promoter system (Guzman *et al.*, *J. Bacteriol. 174*:7716-7728 (1992); the entirety of which is herein incorporated by reference), alkaline phosphatase, a tryptophan (trp) promoter system (Goeddel, *Nucleic Acids Res. 8*:4057 (1980); EP 36,776; both of which are herein incorporated by reference in their entirety) and hybrid promoters such as the tac promoter (deBoer *et al.*, *Proc. Natl. Acad. Sci. (USA) 80*:21-25 (1983); the entirety of which is herein incorporated by reference). However, other known bacterial inducible promoters are suitable (Siebenlist *et al.*, *Cell 20*:269 (1980); the entirety of which is herein incorporated by reference).

Promoters for use in bacterial systems also generally contain a Shine-Dalgarno (S.D.) sequence operably linked to the DNA encoding the polypeptide of interest. The promoter can be removed from the bacterial source DNA by restriction enzyme digestion and inserted into the vector containing the desired DNA.

Construction of suitable vectors containing one or more of the above-listed components employs standard ligation techniques. Isolated plasmids or DNA fragments are cleaved, tailored and re-ligated in the form desired to generate the plasmids required. Examples of available bacterial expression vectors include, but are not limited to, the multifunctional *E. coli* cloning and expression vectors such as Bluescript™ (Stratagene, La Jolla, CA), in which, for example, encoding an *A. nidulans* protein homologue or fragment thereof homologue, may be ligated into the vector in frame with sequences for the amino-terminal Met and the subsequent 7 residues of -

galactosidase so that a hybrid protein is produced; pIN vectors (Van Heeke and Schuster, *J. Biol. Chem. 264*:5503-5509 (1989), the entirety of which is herein incorporated by reference); and the like. pGEX vectors (Promega, Madison Wisconsin U.S.A.) may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption to glutathione-agarose beads followed by elution in the presence of free glutathione. Proteins made in such systems are designed to include heparin, thrombin or factor XA protease cleavage sites so that the cloned polypeptide of interest can be released from the GST moiety at will.

Suitable host bacteria for a bacterial vector include archaebacteria and eubacteria, especially eubacteria and most preferably *Enterobacteriaceae*. Examples of useful bacteria include *Escherichia, Enterobacter, Azotobacter, Erwinia, Bacillus, Pseudomonas, Klebsiella, Proteus, Salmonella, Serratia, Shigella, Rhizobia, Vitreoscilla and Paracoccus*. Suitable *E. coli* hosts include *E. coli* W3110 (American Type Culture Collection (ATCC) 27,325, Manassas, Virginia U.S.A.), *E. coli* 294 (ATCC 31,446), *E. coli B* and *E. coli* X1776 (ATCC 31,537). These examples are illustrative rather than limiting. Mutant cells of any of the above-mentioned bacteria may also be employed. It is, of course, necessary to select the appropriate bacteria taking into consideration replicability of the replicon in the cells of a bacterium. For example, *E. coli, Serratia*, or *Salmonella* species can be suitably used as the host when well known plasmids such as pBR322, pBR325, pACYC177, or pKN410 are used to supply the replicon. *E. coli* strain W3110 is a preferred host or parent host because it is a common host strain for recombinant DNA product fermentations. Preferably, the host cell should secrete minimal amounts of proteolytic enzymes.

Host cells are transfected and preferably transformed with the above-described vectors and cultured in conventional nutrient media modified as appropriate for inducing promoters, selecting transformants, or amplifying the genes encoding the desired sequences.

Numerous methods of transfection are known to the ordinarily skilled artisan, for example, calcium phosphate and electroporation. Depending on the host cell used, transformation is done using standard techniques appropriate to such cells. The calcium treatment employing calcium chloride, as described in section 1.82 of Sambrook *et al.*, *Molecular Cloning*: *A Laboratory Manual*, New York: Cold Spring Harbor Laboratory Press, (1989), is generally used for bacterial cells that contain substantial cell-wall barriers. Another method for transformation employs polyethylene glycol/DMSO, as described in Chung and Miller (Chung and Miller, *Nucleic Acids Res. 16*:3580 (1988); the entirety of which is herein incorporated by reference). Yet another method is the use of the technique termed electroporation.

Bacterial cells used to produce the polypeptide of interest for purposes of this invention are cultured in suitable media in which the promoters for the nucleic acid encoding the heterologous polypeptide can be artificially induced as described generally, e.g., in Sambrook *et al.*, *Molecular Cloning*: *A Laboratory Manual*, New York: Cold Spring Harbor Laboratory Press, (1989). Examples of suitable media are given in U.S. Pat. Nos. 5,304,472 and 5,342,763; both of which are incorporated by reference in their entirety.

In addition to the above discussed procedures, practitioners are familiar with the standard resource materials which describe specific conditions and procedures for the construction, manipulation and isolation of macromolecules (e.g., DNA molecules, plasmids, etc.), generation of recombinant organisms and the screening and isolating of clones, (see for example, Sambrook

et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press (1989); Mailga *et al., Methods in Plant Molecular Biology,* Cold Spring Harbor Press (1995), the entirety of which is herein incorporated by reference; Birren *et al., Genome Analysis: Analyzing DNA,* 1, Cold Spring Harbor, New York, the entirety of which is herein incorporated by reference).

(f) Computer Readable Media

The nucleotide sequence provided in SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof, or complement thereof, or a nucleotide sequence at least 90% identical, preferably 95%, identical even more preferably 99% or 100% identical to the sequence provided in SEQ ID NO: 1 through SEQ ID NO: 2814 or fragment thereof, or complement thereof, can be "provided" in a variety of mediums to facilitate use. Such a medium can also provide a subset thereof in a form that allows a skilled artisan to examine the sequences.

A preferred subset of nucleotide sequences are those nucleic acid sequences that encodes a maize or a soybean triose phosphate isomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule

that encodes a maize or a soybean invertase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or complement thereof or fragment of either f, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof or fragment of either.

A further preferred subset of nucleic acid sequences is where the subset of sequences is two proteins or fragments thereof, more preferably three proteins or fragments thereof and even more preferable four proteins or fragments thereof, these nucleic acid sequences are selected from the group that comprises a maize or a soybean triose phosphate isomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate aldolase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 1,6-bisphosphate enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructose 6-phosphate 2-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucoisomerase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a

soybean vacuolar H^+ translocating-pyrophosphatase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean pyrophosphate-dependent fructose-6-phosphate phosphotransferase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean invertase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean sucrose synthase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean hexokinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean fructokinase enzyme or complement thereof or fragment of either f, a nucleic acid molecule that encodes a maize or a soybean NDP-kinase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean glucose-6-phosphate 1-dehydrogenase enzyme or complement thereof or fragment of either, a nucleic acid molecule that encodes a maize or a soybean phosphoglucomutase enzyme or complement thereof or fragment of either and a nucleic acid molecule that encodes a maize or a soybean UDP-glucose pyrophophorylase enzyme or complement thereof or fragment of either.

In one application of this embodiment, a nucleotide sequence of the present invention can be recorded on computer readable media. As used herein, "computer readable media" refers to any medium that can be read and accessed directly by a computer. Such media include, but are not limited to: magnetic storage media, such as floppy discs, hard disc, storage medium and magnetic tape: optical storage media such as CD-ROM; electrical storage media such as RAM and ROM; and hybrids of these categories such as magnetic/optical storage media. A skilled artisan can readily appreciate how any of the presently known computer readable mediums can

be used to create a manufacture comprising computer readable medium having recorded thereon a nucleotide sequence of the present invention.

As used herein, "recorded" refers to a process for storing information on computer readable medium. A skilled artisan can readily adopt any of the presently known methods for recording information on computer readable medium to generate media comprising the nucleotide sequence information of the present invention. A variety of data storage structures are available to a skilled artisan for creating a computer readable medium having recorded thereon a nucleotide sequence of the present invention. The choice of the data storage structure will generally be based on the means chosen to access the stored information. In addition, a variety of data processor programs and formats can be used to store the nucleotide sequence information of the present invention on computer readable medium. The sequence information can be represented in a word processing text file, formatted in commercially-available software such as WordPerfect and Microsoft Word, or represented in the form of an ASCII file, stored in a database application, such as DB2, Sybase, Oracle, or the like. A skilled artisan can readily adapt any number of data processor structuring formats (e.g. text file or database) in order to obtain computer readable medium having recorded thereon the nucleotide sequence information of the present invention.

By providing one or more of nucleotide sequences of the present invention, a skilled artisan can routinely access the sequence information for a variety of purposes. Computer software is publicly available which allows a skilled artisan to access sequence information provided in a computer readable medium. The examples which follow demonstrate how software which implements the BLAST (Altschul *et al., J. Mol. Biol. 215:*403-410 (1990), the entirety of which is herein incorporated by reference) and BLAZE (Brutlag *et al., Comp. Chem.*

*17:*203-207 (1993), the entirety of which is herein incorporated by reference) search algorithms on a Sybase system can be used to identify open reading frames (ORFs) within the genome that contain homology to ORFs or proteins from other organisms. Such ORFs are protein-encoding fragments within the sequences of the present invention and are useful in producing commercially important proteins such as enzymes used in amino acid biosynthesis, metabolism, transcription, translation, RNA processing, nucleic acid and a protein degradation, protein modification and DNA replication, restriction, modification, recombination and repair.

The present invention further provides systems, particularly computer-based systems, which contain the sequence information described herein. Such systems are designed to identify commercially important fragments of the nucleic acid molecule of the present invention. As used herein, "a computer-based system" refers to the hardware means, software means and data storage means used to analyze the nucleotide sequence information of the present invention. The minimum hardware means of the computer-based systems of the present invention comprises a central processing unit (CPU), input means, output means and data storage means. A skilled artisan can readily appreciate that any one of the currently available computer-based system are suitable for use in the present invention.

As indicated above, the computer-based systems of the present invention comprise a data storage means having stored therein a nucleotide sequence of the present invention and the necessary hardware means and software means for supporting and implementing a search means. As used herein, "data storage means" refers to memory that can store nucleotide sequence information of the present invention, or a memory access means which can access manufactures having recorded thereon the nucleotide sequence information of the present invention. As used herein, "search means" refers to one or more programs which are implemented on the computer-

based system to compare a target sequence or target structural motif with the sequence information stored within the data storage means. Search means are used to identify fragments or regions of the sequence of the present invention that match a particular target sequence or target motif. A variety of known algorithms are disclosed publicly and a variety of commercially available software for conducting search means are available can be used in the computer-based systems of the present invention. Examples of such software include, but are not limited to, MacPattern (EMBL), BLASTIN and BLASTIX (NCBIA). One of the available algorithms or implementing software packages for conducting homology searches can be adapted for use in the present computer-based systems.

The most preferred sequence length of a target sequence is from about 10 to 100 amino acids or from about 30 to 300 nucleotide residues. However, it is well recognized that during searches for commercially important fragments of the nucleic acid molecules of the present invention, such as sequence fragments involved in gene expression and protein processing, may be of shorter length.

As used herein, "a target structural motif," or "target motif," refers to any rationally selected sequence or combination of sequences in which the sequences the sequence(s) are chosen based on a three-dimensional configuration which is formed upon the folding of the target motif. There are a variety of target motifs known in the art. Protein target motifs include, but are not limited to, enzymatic active sites and signal sequences. Nucleic acid target motifs include, but are not limited to, promoter sequences, *cis* elements, hairpin structures and inducible expression elements (protein binding sequences).

Thus, the present invention further provides an input means for receiving a target sequence, a data storage means for storing the target sequences of the present invention sequence

identified using a search means as described above and an output means for outputting the identified homologous sequences. A variety of structural formats for the input and output means can be used to input and output information in the computer-based systems of the present invention. A preferred format for an output means ranks fragments of the sequence of the present invention by varying degrees of homology to the target sequence or target motif. Such presentation provides a skilled artisan with a ranking of sequences which contain various amounts of the target sequence or target motif and identifies the degree of homology contained in the identified fragment.

A variety of comparing means can be used to compare a target sequence or target motif with the data storage means to identify sequence fragments sequence of the present invention. For example, implementing software which implement the BLAST and BLAZE algorithms (Altschul *et al., J. Mol. Biol. 215:*403-410 (1990)) can be used to identify open frames within the nucleic acid molecules of the present invention. A skilled artisan can readily recognize that any one of the publicly available homology search programs can be used as the search means for the computer-based systems of the present invention.

Having now generally described the invention, the same will be more readily understood through reference to the following examples which are provided by way of illustration and are not intended to be limiting of the present invention, unless specified.

Example 1

The MONN01 cDNA library is a normalized library generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the

same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON001 cDNA library is generated from maize (B73, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) immature tassels at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in a greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue from the maize plant is collected at the V6 stage. At that stage the

tassel is an immature tassel of about 2-3 cm in length. The tassels are removed and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON003 library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) roots at the V6 developmental stage. Seeds are planted at a depth of approximately 3 cm in coil into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth, the seedlings are transplanted into 10 inch pots containing the Metro 200 growing medium. Plants are watered daily before transplantation and approximately 3 times a week after transplantation. Peters 15-16-17 fertilizer is applied approximately three times per week after transplanting at a concentration of 150 ppm N. Two to three times during the life time of the plant from transplanting to flowering a total of approximately 900 mg Fe is added to each pot. Maize plants are grown in the green house in approximately 15hr day/9hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6 leaf development stage. The root system is cut from maize plant and washed with water to free it from the soil. The tissue is then immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON004 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after

transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON005 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) root tissue at the V6 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The root system is cut from the mature maize plant and washed with water to free it from

the soil. The tissue is immediately frozen in liquid nitrogen and the harvested tissue is then stored at -80°C until RNA preparation.

The SATMON006 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older more juvenile leaves, which are in a basal position, as well as the younger more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON007 cDNA library is generated from the primary root tissue of 5 day old maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark until germination (one day). After germination, the trays, along with the moist paper, are moved to a greenhouse where the maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles for approximately 5 days. The

daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. The primary root tissue is collected when the seedlings are 5 days old. At this stage, the primary root (radicle) is pushed through the coleorhiza which itself is pushed through the seed coat. The primary root, which is about 2-3 cm long, is cut and immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON008 cDNA library is generated from the primary shoot (coleoptile 2-3 cm) of maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings which are approximately 5 days old. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark until germination (one day). Then the trays containing the seeds are moved to a greenhouse at 15hr daytime/9 hr nighttime cycles and grown until they are 5 days post germination. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Tissue is collected when the seedlings are 5 days old. At this stage, the primary shoot (coleoptile) is pushed through the seed coat and is about 2-3 cm long. The coleoptile is dissected away from the rest of the seedling, immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON009 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaves at the 8 leaf stage (V8 plant development stage). Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a

strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is 80°F and the nighttime temperature is 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 8-leaf development stage. The older more juvenile leaves, which are in a basal position, as well as the younger more adult leaves, which are more apical, are cut at the base of the leaves. The leaves are then pooled and then immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON010 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) root tissue at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is 80°F and the nighttime temperature is 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the V8 development stage. The root system is cut from this mature maize plant and washed with water to free it from the soil. The tissue is immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON011 cDNA library is generated from undeveloped maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaf at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The second youngest leaf which is at the base of the apical leaf of V6 stage maize plant is cut at the base and immediately transferred to liquid nitrogen containers in which the leaf is crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON012 cDNA library is generated from 2 day post germination maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark until germination (one day). Then the trays containing the seeds are moved to the greenhouse and grown at 15hr daytime/9 hr nighttime cycles until 2 days post germination. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Tissue is collected when the seedlings are 2 days old. At the two day stage, the coleorhiza is pushed through the seed coat and the primary root (the radicle) is pierced the coleorhiza but is barely visible. Also, at this two day stage, the

coleoptile is just emerging from the seed coat. The 2 days post germination seedlings are then immersed in liquid nitrogen and crushed. The harvested tissue is stored at -80°C until preparation of total RNA.

The SATMON013 cDNA library is generated from apical maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) meristem founder at the V4 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Prior to tissue collection, the plant is at the 4 leaf stage. The lead at the apex of the V4 stage maize plant is referred to as the meristem founder. This apical meristem founder is cut, immediately frozen in liquid nitrogen and crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON014 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) endosperm fourteen days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation.

Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the maize plant ear shoots are ready for fertilization. At this stage, the ear shoots are enclosed in a paper bag before silk emergence to withhold the pollen. The ear shoots are pollinated and 14 days after pollination, the ears are pulled out and then the kernels are plucked out of the ears. Each kernel is then dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the endosperms are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON016 library is a maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) sheath library collected at the V8 developmental stage. Seeds are planted in a depth of approximately 3 cm in solid into 2-3 inch pots containing Metro growing medium. After 2-3 weeks growth, they are transplanted into 10" pots containing the same. Plants are watered daily before transplantation and approximately the times a week after transplantation. Peters 15-16-17 fertilizer is applied approximately three times per week after transplanting, at a strength of 150 ppm N. Two to three times during the life time of the plant from transplanting to flowering, a total of approximately 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15hr day/9hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. When the maize plants are at the V8 stage the 5th and 6th leaves from the

bottom exhibit fully developed leaf blades. At the base of these leaves, the ligule is differentiated and the leaf blade is joined to the sheath. The sheath is dissected away from the base of the leaf then the sheath is frozen in liquid nitrogen and crushed. The tissue is then stored at -80°C until RNA preparation.

The SATMON017 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) embryo seventeen days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth the seeds are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the ear shoots of maize plant, which are ready for fertilization, are enclosed in a paper bag before silk emergence to withhold the pollen. The ear shoots are fertilized and 21 days after pollination, the ears are pulled out and the kernels are plucked out of the ears. Each kernel is then dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the embryos are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON019 (Lib3054) cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) culm (stem) at the V8 developmental stage. Seeds are planted

at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. When the maize plant is at the V8 stage, the 5th and 6th leaves from the bottom have fully developed leaf blades. The region between the nodes of the 5th and the sixth leaves from the bottom is the region of the stem that is collected. The leaves are pulled out and the sheath is also torn away from the stem. This stem tissue is completely free of any leaf and sheath tissue. The stem tissue is then frozen in liquid nitrogen and stored at -80°C until RNA preparation.

The SATMON020 cDNA library is from a maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) Hill Type II-Initiated Callus. Petri plates containing approximately 25 ml of Type II initiation media are prepared. This medium contains N6 salts and vitamins, 3% sucrose, 2.3 g/liter proline 0.1 g/liter enzymatic casein hydrolysate, 2mg/liter 2,4 – dichloro phenoxy-acetic acid (2,4, D), 15.3 mg/liter $AgNO_3$ and 0.8% bacto agar and is adjusted to pH 6.0 before autoclaving. At 9-11 days after pollination, an ear with immature embryos measuring approximately 1-2 mm in length is chosen. The husks and silks are removed and then the ear is broken into halves and placed in an autoclaved solution of Clorox/TWEEN 20 sterilizing solution. Then the ear is rinsed with deionized water. Then each embryo is extracted from the

kernel. Intact embryos are placed in contact with the medium, scutellar side up). Multiple embryos are plated on each plate and the plates are incubated in the dark at 25°C. Type II calluses are friable, can be subcultured with a spatula, frequently regenerate via somatic embryogenesis and are relatively undifferentiated. As seen in the microscope, the Tape II calluses show color ranging from translucent to light yellow and heterogeneity on with respect to embryoid structure as well as stage of embryoid development. Once Type II callus are formed, the calluses is transferred to type II callus maintenance medium without $AgN0_3$. Every 7-10 days, the callus is subcultured. About 4 weeks after embryo isolation the callus is removed from the plates and then frozen in liquid nitrogen. The harvested tissue is stored at –80°C until RNA preparation.

The SATMON021 cDNA library is generated from the immature maize (DK604, Dekalb Genetics, Dekalb Illinois, U.S.A.) tassel at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. As the maize plant enters the V8 stage, tassels which are 15-20 cm in length are collected and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The SATMON022 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) ear (growing silks) at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. *Zea mays* plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the plant is in the V8 stage. At this stage, some immature ear shoots are visible. The immature ear shoots (approximately 1 cm in length) are pulled out, frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON23 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) ear (growing silk) at the V8 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime

temperature is approximately 70°F. When the tissue is harvested at the V8 stage, the length of the ear that is harvested is about 10-15 cm and the silks are just exposed (approximately 1 inch). The ear along with the silks is frozen in liquid nitrogen and then the tissue is stored at -80°C until RNA preparation.

The SATMON024 cDNA library is generated from the immature maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) tassel at the V9 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. As a maize plant enters the V9 stage, the tassel is rapidly developing and a 37 cm tassel along with the glume, anthers and pollen is collected and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The SATMON025 cDNA library is from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) Hill Type II-Regenerated Callus. Type II callus is grown in initiation media as described for SATMON020 and then the embryoids on the surface of the Type II callus are allowed to mature and germinate. The 1-2 gm fresh weight of the soft friable type callus containing numerous embryoids are transferred to 100 x 15 mm petri plates containing 25 ml of regeneration media. Regeneration media consists of Murashige and Skoog (MS) basal salts,

modified White's vitamins (0.2 g/liter glycine and 0.5 g/liter myo-inositoland 0.8% bacto agar (6SMS0D)). The plates are then placed in the dark after covering with parafilm. After 1 week, the plates are moved to a lighted growth chamber with 16 hr light and 8 hr dark photoperiod. Three weeks after plating the Type II callus to 6SMS0D, the callus exhibit shoot formation. The callus and the shoots are transferred to fresh 6SMS0D plates for another 2 weeks. The callus and the shoots are then transferred to petri plates with reduced sucrose (3SMSOD). Upon distinct formation of a root and shoot, the newly developed green plants are then removed out with a spatula and frozen in liquid nitrogen containers. The harvested tissue is then stored at –80°C until RNA preparation.

The SATMON026 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) juvenile/adult shift leaves at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plants are at the 8-leaf development stage. Leaves are founded sequentially around the meristem over weeks of time and the older, more juvenile leaves arise earlier and in a more basal position than the younger, more adult leaves, which are in a

more apical position. In a V8 plant, some leaves which are in the middle portion of the plant exhibit characteristics of both juvenile as well as adult leaves. They exhibit a yellowing color but also exhibit, in part, a green color. These leaves are termed juvenile/adult shift leaves. The juvenile/adult shift leaves (the 4th, 5th leaves from the bottom) are cut at the base, pooled and transferred to liquid nitrogen in which they are then crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON027 cDNA library is generated from 6 day maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaves. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the Metro 200 growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. *Zea mays* plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Prior to tissue collection, when the plant is at the 8-leaf stage, water is held back for six days. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical, are all cut at the base of the leaves. All the leaves exhibit significant wilting. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are then crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON028 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) roots at the V8 developmental stage that are subject to six days water stress. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the Metro 200 growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Prior to tissue collection, when the plant is at the 8-leaf stage, water is held back for six days. The root system is cut, shaken and washed to remove soil. Root tissue is then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are then crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON029 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings at the etiolated stage. Seeds are planted on a moist filter paper on a covered tray that is kept in the dark for 4 days at approximately 70°F. Tissue is collected when the seedlings are 4 days old. By 4 days, the primary root has penetrated the coleorhiza and is about 4-5 cm and the secondary lateral roots have also made their appearance. The coleoptile has also pushed through the seed coat and is about 4-5 cm long. The seedlings are frozen in liquid nitrogen and crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON030 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) root tissue at the V4 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth, they are transplanted into 10 inch pots containing the same. Plants are watered daily before transplantation and approximately 3 times a week after transplantation. Peters 15-16-17 fertilizer is applied approximately three times per week after transplanting, at a strength of 150 ppm N. Two to three times during the life time of the plant, from transplanting to flowering, a total of approximately 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15hr day/9hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 sodium vapor lamps. Tissue is collected when the maize plant is at the 4 leaf development stage. The root system is cut from the mature maize plant and washed with water to free it from the soil. The tissue is then immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON031 cDNA library is generated from the maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) leaf tissue at the V4 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house

in 15 hr day/9 hr night cycles. The daytime temperature is 80°F and the nighttime temperature is 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 4-leaf development stage. The third leaf from the bottom is cut at the base and immediately frozen in liquid nitrogen and crushed. The tissue is immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON033 cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) embryo tissue 13 days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the ear shoots of the maize plant, which are ready for fertilization, are enclosed in a paper bag before silk emergent to withhold the pollen. The ear shoots are pollinated and 13 days after pollination, the ears are pulled out and then the kernels are plucked cut of the ears. Each kernel is then dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the embryos are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The SATMON034 cDNA library is generated from cold stressed maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) seedlings. Seeds are planted on a moist filter paper on a covered tray that is kept on at 10°C for 7 days. After 7 days, the temperature is shifted to 15°C for one day until germination of the seed. Tissue is collected once the seedlings are 1 day old. At this point, the coleorhiza has just pushed out of the seed coat and the primary root is just making its appearance. The coleoptile has not yet pushed completely through the seed coat and is also just making its appearance. These 1 day old cold stressed seedlings are frozen in liquid nitrogen and crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMON~001 (Lib36, Lib83, Lib84) cDNA library is generated from maize leaves at the V8 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in a greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue from the maize plant is collected at the V8 stage. The older more juvenile leaves in a basal position was well as the younger more adult leaves which are more apical are all cut at the base, pooled and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SATMONN01 cDNA library is generated from maize (B73, Illinois Foundation Seeds, Champaign, Illinois U.S.A.)normalized immature tassels at the V6 plant development stage normalized tissue. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in a greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue from the maize plant is collected at the V6 stage. At that stage the tassel is an immature tassel of about 2-3 cm in length. The tassels are removed and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The SATMONN04 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign, Illinois U.S.A.) normalized total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older, more juvenile leaves, which are in a basal position, as well as the younger, more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-

hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The SATMONN05 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) normalized root tissue at the V6 development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The root system is cut from the mature maize plant and washed with water to free it from the soil. The tissue is immediately frozen in liquid nitrogen and the harvested tissue is then stored at -80°C until RNA preparation. The single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads

with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The SATMONN06 cDNA library is generated from maize (B73 x Mo17, Illinois Foundation Seeds, Champaign Illinois, U.S.A.) normalized total leaf tissue at the V6 plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 6-leaf development stage. The older more juvenile leaves, which are in a basal position, as well as the younger more adult leaves, which are more apical are cut at the base of the leaves. The leaves are then pooled and immediately transferred to liquid nitrogen containers in which the pooled leaves are crushed. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the

biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The CMZ029 (SATMON036) cDNA library is generated from maize (DK604, Dekalb Genetics, Dekalb, Illinois U.S.A.) endosperm 22 days after pollination. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the green house in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. After the V10 stage, the ear shoots of the maize plant, which are ready for fertilization, are enclosed in a paper bag before silk emergent to withhold the pollen. The ear shoots are pollinated and 22 days after pollination, the ears are pulled out and then the kernels are plucked out of the ears. Each kernel is then dissected into the embryo and the endosperm and the alurone layer is removed. After dissection, the endosperms are immediately frozen in liquid nitrogen and then stored at -80°C until RNA preparation.

The CMz030 (Lib143) cDNA library is generated from maize seedling tissue two days post germination. Seeds are planted on a moist filter paper on a covered try that is keep in the dark until germination. The trays are then moved to the bench top at 15 hr daytime/9 hr nighttime cycles for 2 days post-germination. The day time temperature is 80^0F and the nighttime temperature is 70^0F. Tissue is collected when the seedlings are 2 days old. At this stage, the colehrhiza has pushed through the seed coat and the primary root (the radicle) is just piercing the colehrhiza and is barely visible. The seedlings are placed at 42^0C for 1 hour. Following the heat shock treatment, the seedlings are immersed in liquid nitrogen and crushed. The harvested tissue is stored at -80^0 until RNA preparation.

The CMz031 (Lib148) cDNA library is generated from maize pollen tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag to withhold pollen. Twenty-one days after pollination, prior to removing the ears, the paper bag is shaken to collect the mature pollen. The mature pollen is immediately frozen in liquid

nitrogen containers and the pollen is crushed. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz033 (Lib189) cDNA library is generated from maize pooled leaf tissue. Samples are harvested from open pollinated plants. Tissue is collected from maize leaves at the anthesis stage. The leaves are collect from from 10-12 plants and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz034 (Lib3060) cDNA library is generated from maize mature tissue at 40 days post pollination plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from leaves located two leaves below the ear leaf. This sample represents those genes expressed during onset and early stages of leaf senescence. The leaves are pooled and immediately transferred to liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz035 (Lib3061) cDNA library is generated from maize endosperm tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch

peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80 F and the nighttime temperature is approximately 70 F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag prior to silk emergence to withhold pollen. Thirty-two days after pollination, the ears are pulled out and the kernels are removed from the cob. Each kernel is dissected into the embryo and the endosperm and the aleurone layer is removed. After dissection, the endosperms are immediately transferred to liquid nitrogen. The harvested tissue is then stored at -80 C until RNA preparation.

The CMz036 (Lib3062) cDNA library is generated from maize husk tissue at the 8 week old plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F.

Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from 8 week old plants. The husk is separated from the ear and immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz037 (Lib3059) cDNA library is generated from maize pooled kernal at 12-15 days after pollienation plant development stage. Sample were collected from field grown material. Whole kernals from hand pollinated (control pollination) are harvested as whole ears and immediately frozen on dry ice. Kernels from 10-12 ears were pooled and ground together in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz039 (Lib3066) cDNA library is generated from maize immature anther tissue at the 7 week old immature tassel stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 7 week old immature tassel stage. At this stage, prior to anthesis, the immature anthers are green and enclosed in the staminate spikelet. The developing anthers are dissected away from the 7 week old immature tassel and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz040 (Lib3067) cDNA library is generated from maize kernel tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag before silk emergence to withhold pollen. Five to eight days after controlled pollination. The ears are pulled and the kernels removed. The kernels are immediately frozen in liquid nitrogen. The harvested kernels tissue is then stored at -80°C until RNA preparation. This sample represents gene expressed in early kernel development, during periods of cell division, amyloplast biogenesis and early carbon flow across the material to filial tissue.

The CMz041 (Lib3068) cDNA library is generated from maize pollen germinating silk tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times

during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants when the ear shoots are ready for fertilization at the silk emergence stage. The emerging silks are pollinated with an excess of pollen under controlled pollination conditions in the green house. Eighteen hours after pollination the silks are removed from the ears and immediately frozen in liquid nitrogen containers. This sample represents genes expressed in both pollen and silk tissue early in pollination. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz042 (Lib3069) cDNA library is generated from maize ear tissue excessively pollinated at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ stage plants and the ear shoots which are ready for fertilization are at the silk emergence stage. The immature ears are pollinated with an excess of pollen under controlled pollination

conditions. Eighteen hours post-pollination, the ears are removed and immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz044 (Lib3075) cDNA library is generated from maize microspore tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from immature anthers from 7 week old tassels. The immature anthers are first dissected from the 7 week old tassel with a scalpel on a glass slide covered with water. The microspores (immature pollen) are released into the water and are recovered by centrifugation. The microspore suspension is immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz045 (Lib3076) cDNA library is generated from maize immature ear megaspore tissue. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after

transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from immature ear (megaspore) obtained from 7 week old plants. The immature ears are harvested from the 7 week old plants and are approximately 2.5 to 3 cm in length. The kernels are removed from the cob immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz047 (Lib3078) cDNA library is generated from maize CO_2 treated high-exposure shoot tissue at the V10+ plant development stage. RX601 maize seeds are sterilized for i minute with a 10% clorox solution. The seeds are rolled in germination paper, and germinated in 0.5 mM calcium sulfate solution for two days ate 30°C. The seedlings are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium at a rate of 2-3 seedlings per pot. Twenty pots are placed into a high CO_2 environment (approximately 1000 ppm CO_2). Twenty plants were grown under ambient greenhouse CO_2 (approximately 450 ppm CO_2). Plants are watered daily before transplantation and three times a week after transplantation. Peters 20-20-20 fertilizer is also lightly applied. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. At ten days post planting, the shoots from both atmosphere are frozen in liquid nitrogen and lightly ground. The roots are washed in deionized water to remove the support media and

the tissue is immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz048 (Lib3079) cDNA library is generated from maize basal endosperm transfer layer tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected from V10+ maize plants. The ear shoots, which are ready for fertilization, are enclosed in a paper bag prior to silk emergence, to withhold the pollen. Kernels are harvested at 12 days post-pollination and placed on wet ice for dissection. The kernels are cross sectioned laterally, dissecting just above the pedicel region, including 1-2 mm of the lower endosperm and the basal endosperm transfer region. The pedicel and lower endosperm region containing the basal endosperm transfer layer is pooled and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz049(Lib3088) cDNA library is generated from maize immature anther tissue at the 7 week old immature tassel stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are

transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is at the 7 week old immature tassel stage. At this stage, prior to anthesis, the immature anthers are green and enclosed in the staminate spikelet. The developing anthers are dissected away from the 7 week old immature tassel and immediately transferred to liquid nitrogen container. The harvested tissue is then stored at -80°C until RNA preparation.

The CMz050 (Lib3114) cDNA library is generated from maize silk tissue at the V10+ plant development stage. Seeds are planted at a depth of approximately 3 cm into 2-3 inch peat pots containing Metro 200 growing medium. After 2-3 weeks growth they are transplanted into 10 inch pots containing the same growing medium. Plants are watered daily before transplantation and three times a week after transplantation. Peters 15-16-17 fertilizer is applied three times per week after transplanting at a strength of 150 ppm N. Two to three times during the lifetime of the plant, from transplanting to flowering, a total of 900 mg Fe is added to each pot. Maize plants are grown in the greenhouse in 15 hr day/9 hr night cycles. The daytime temperature is approximately 80°F and the nighttime temperature is approximately 70°F. Supplemental lighting is provided by 1000 W sodium vapor lamps. Tissue is collected when the maize plant is beyond the 10-leaf development stage and the ear shoots are approximately 15-20

cm in length. The ears are pulled and silks are separated from the ears and immediately transferred to liquid nitrogen containers. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON001 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) total leaf tissue at the V4 plant development stage. Leaf tissue from 38, field grown V4 stage plants is harvested from the 4th node. Leaf tissue is removed from the plants and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON002 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue at the V4 plant development stage. Root tissue from 76, field grown V4 stage plants is harvested. The root systems is cut from the soybean plant and washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON003 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling hypocotyl axis tissue harvested 2 day post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 2 days after the start of imbibition. The 2 days after imbibition samples are separated into 3 collections after removal of any adhering seed coat. At the 2 day stage, the hypocotyl axis is emerging from the soil. A few seedlings have cracked the

soil surface and exhibited slight greening of the exposed cotyledons. The seedlings are washed in water to remove soil, hypocotyl axis harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON004 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling cotyledon tissue harvested 2 day post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^0C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 2 days after the start of imbibition. The 2 days after imbibition samples are separated into 3 collections after removal of any adhering seed coat. At the 2 day stage, the hypocotyl axis is emerging from the soil. A few seedlings have cracked the soil surface and exhibited slight greening of the exposed cotyledons. The seedlings are washed in water to remove soil, hypocotyl axis harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON005 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling hypocotyl axis tissue harvested 6 hour post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^0C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 6 hours after the start of imbibition. The 6 hours after imbibition samples are separated into 3 collections after removal of any adhering seed coat. The

6 hours after imbibition sample is collected over the course of approximately 2 hours starting at 6 hours post imbibition. At the 6 hours after imbibition stage, not all cotyledons have become fully hydrated and germination, or radicle protrusion, has not occurred. The seedlings are washed in water to remove soil, hypocotyl axis harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON006 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling cotyledons tissue harvest 6 hour post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. Trays are placed in an environmental chamber and grown at 12hr daytime/12hr nightime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Tissue is collected 6 hours after imbibition. The 6 hours after imbibition samples are separated into 3 collections after removal of any adhering seed coat. The 6 hours after imbibition sample is collected over the course of approximately 2 hours starting at 6 hours post-imbibition. At the 6 hours after imbibition, not all cotyledons have become fully hydrated and germination or radicle protrusion, have not occurred. The seedlings are washed in water to remove soil, cotyledon harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON007 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 25 and 35 days post-flowering. Seed pods from field grown plants are harvested 25 and 35 days after flowering and the seeds extracted from the pods. Approximately 4.4g and 19.3g of seeds are harvested from the

respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON008 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue harvested from 25 and 35 days post-flowering plants. Total leaf tissue is harvested from field grown plants. Approximately 19g and 29g of leaves are harvested from the fourth node of the plant 25 and 35 days post-flowering and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON009 cDNA library is generated from soybean cutlivar C1944 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) pod and seed tissue harvested 15 days post-flowering. Pods from field grown plants are harvested 15 days post-flowering. Approximately 3g of pod tissue is harvested and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON010 cDNA library is generated from soybean cultivar C1944 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) seed tissue harvested 40 days post-flowering. Pods from field grown plants are harvested 40 days post-flowering. Pods and seeds are separated, approximately 19g of seed tissue is harvested and immediately frozen in dry-ice. The harvested tissue is then stored at
-80°C until RNA preparation.

The SOYMON011 cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) leaf tissue. Leaves are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and

the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 30g of leaves are harvested from the 4th node of each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON012 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue. Leaves from field grown plants are harvested from the fourth node 15 days post-flowering. Approximately 12g of leaves are harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON013 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root and nodule tissue. Approximately, 28g of root tissue from field grown plants is harvested 15 days post-flowering. The root system is cut from the soybean plant, washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON014 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 25 and 35 days after flowering. Seed pods from field grown plants are harvested 15 days after flowering and the seeds extracted from the pods. Approximately 5g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON015 cDNA is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 45 and 55 days post-flowering. Seed pods from field grown plants are harvested 45 and 55 days after flowering and the seeds

extracted from the pods. Approximately 19g and 31g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON016 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue. Approximately, 61g and 38g of root tissue from field grown plants is harvested 25 and 35 days post- flowering is harvested. The root system is cut from the soybean plant and washed with water to free it from the soil. The tissue is placed in 14ml polystyrene tubes and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON017 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue. Approximately 28g of root tissue from field grown plants is harvested 45 and 55 days post-flowering. The root system is cut from the soybean plant, washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON018 cDNA is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue harvested 45 and 55 days post-flowering. Leaves from field grown plants are harvested 45 and 55 days after flowering from the fourth node. Approximately 27g and 33g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON019 cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) root tissue. Roots are harvested from plants grown in an environmental chamber

under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 50g and 56g of roots are harvested from each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON020 cDNA is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 65 and 75 days post-flowering. Seed pods from field grown plants are harvested 45 and 55 days after flowering and the seeds extracted from the pods. Approximately 14g and 31g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON021 cDNA library is generated from Soybean Cyst Nematode-resistant soybean cultivar Hartwig (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) root tissue. Plants are grown in tissue culture at room temperature. At approximately 6 weeks post-germination, the plants are exposed to sterilized Soybean Cyst Nematode eggs. Infection is then allowed to progress for 10 days. After the 10 day infection process, the tissue is harvested. Agar from the culture medium and nematodes are removed and the root tissue is immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON022 (Lib3030) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) partially opened flower tissue. Partially to fully opened flower tissue is harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to

maintain even moisture conditions. A total of 3g of flower tissue is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON023 cDNA library is generated from soybean genotype BW211S Null (Tohoku University, Morioka, Japan) seed tissue harvested 15 and 40 days post-flowering. Seed pods from field grown plants are harvested 15 and 40 days post-flowering and the seeds extracted from the pods. Approximately 0.7g and 14.2g of seeds are harvested from the respective seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON024 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) internode-2 tissue harvested 18 days post-imbibition. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium. The plants are grown in a greenhouse for 18 days after the start of imbibition at ambient temperature. Soil is checked and watered daily to maintain even moisture conditions. Stem tissue is harvested 18 days after the start of imbibition. The samples are divided into hypocotyl and internodes 1 through 5. The fifth internode contains some leaf bud material. Approximately 3 g of each sample is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON025 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) leaf tissue harvested 65 days post-flowering. Leaves are harvested from the fourth node of field grown plants 65 days post-flowering. Approximately 18.4g of leaf tissue is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

SOYMON026 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) root tissue harvested 65 and 75 days post-flowering. Approximately 27g and 40g of root tissue from field grown plants is harvested 65 and 75 days post- flowering. The root system is cut from the soybean plant, washed with water to free it from the soil and immediately frozen in dry-ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON027 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed tissue harvested 25 days post-flowering. Seed pods from field grown plants are harvested 25 days post-flowering and the seeds extracted from the pods. Approximately 17g of seeds are harvested from the seed pods and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON028 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought-stressed root tissue. The plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of development, water is withheld from half of the plant collection (drought stressed population). After 3 days, half of the plants from the drought stressed condition and half of the plants from the control population are harvested. After another 3 days (6 days post drought induction) the remaining plants are harvested. A total of 27g and 40g of root tissue is harvested and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON029 cDNA library is generated from Soybean Cyst Nematode-resistant soybean cultivar PI07354 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) root tissue. Late fall to early winter greenhouse grown plants are exposed to Soybean Cyst Nematode eggs. At 10 days post-infection, the plants are uprooted, rinsed briefly and the roots frozen in liquid nitrogen. Approximately 20 grams of root tissue is harvested from the infected plants. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON030 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) flower bud tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Flower buds are removed from the plant at the pedicel. A total of 100mg of flower buds are harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON031 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) carpel and stamen tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Flower buds are removed from the plant at the pedicel. Flowers are dissected to separate petals, sepals and reproductive structures (carpels and stamens). A total of 300mg of carpel and stamen tissue are

harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON032 cDNA library is prepared from the Asgrow cultivar A4922 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) rehydrated dry soybean seed meristem tissue. Surface sterilized seeds are germinated in liquid media for 24 hours. The seed axis is then excised from the barely germinating seed, placed on tissue culture media and incubated overnight at 20°C in the dark. The supportive tissue is removed from the explant prior to harvest. Approximately 570mg of tissue is harvested and frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON033 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) heat-shocked seedling tissue without cotyledons. Seeds are imbibed and germinated in vermiculite for 2 days under constant illumination. After 48 hours, the seedlings are transferred to an incubator set at 40°C under constant illumination. After 30, 60 and 180 minutes seedlings are harvested and dissected. A portion of the seedling consisting of the root, hypocotyl and apical hook is frozen in liquid nitrogen and stored at -80°C. The seedlings after 2 days of imbibition are beginning to emerge from the vermiculite surface. The apical hooks are dark green in appearance. Total RNA and poly A^+ RNA is prepared from equal amounts of pooled tissue.

The SOYMON034 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) cold-shocked seedling tissue without cotyledons. Seeds are imbibed and germinated in vermiculite for 2 days under constant illumination. After 48 hours, the seedlings are transferred to a cold room set at 5°C under constant illumination. After 30, 60 and 180 minutes seedlings are harvested and dissected. A

portion of the seedling consisting of the root, hypocotyl and apical hook is frozen in liquid nitrogen and stored at -80°C. The seedlings after 2 days of imbibition are beginning to emerge from the vermiculite surface. The apical hooks are dark green in appearance.

The SOYMON035 cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seed coat tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Seeds are harvested from mid to nearly full maturation (seed coats are not yellowing). The entire embryo proper is removed from the seed coat sample and the seed coat tissue are harvested and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON036 cDNA library is generated from soybean cultivars PI171451, PI227687 and PI229358 (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) insect challenged leaves. Plants from each of the three cultivars are grown in screenhouse conditions. The screenhouse is divided in half and one half of the screenhouse is infested with soybean looper and the other half infested with velvetbean caterpillar. A single leaf is taken from each of the representative plants at 3 different time points, 11 days after infestation, 2 weeks after infestation and 5 weeks after infestation and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation. Total RNA and poly A+ RNA is isolated from pooled tissue consisting of equal quantities of all 18 samples (3 genotypes X 3 sample times X 2 insect genotypes).

The SOYMON037 cDNA library is generated from soybean cultivar A3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) etiolated axis and radical tissue. Seeds are planted in moist vermiculite, wrapped and kept at room temperature in complete darkness until harvest. Etiolated axis and hypocotyl tissue is harvested at 2, 3 and 4 days post-planting. A total of 1 gram of each tissue type is harvested at 2, 3 and 4 days after planting and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The SOYMON038 cDNA library is generated from soybean variety Asgrow A3237 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) rehydrated dry seeds. Explants are prepared for transformation after germination of surface-sterilized seeds on solid tissue media. After 6days, at 28^{0}C and 18 hours of light per day, the germinated seeds are cold shocked at 4^{0}C for 24 hours. Meristemic tissue and part of the hypocotyl is remove and cotyledon excised. The prepared explant is then wounded for *Agrobacterium* infection. The 2 grams of harvested tissue is frozen in liquid nitrogen and stored at -80^{0}C until RNA preparation.

The Soy51 (LIB3027) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single

stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The Soy52 (LIB3028) cDNA library is generated from normalized flower DNA. Single stranded DNA representing approximately 1 X 10^6 colony forming units of SOYMON022 harvested tissue is used as the starting material for normalization. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

The Soy53 (LIB3039) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) seedling shoot apical meristem tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Apical tissue is harvested from seedling shoot meristem tissue, 7-8 days after the start of imbibition. The apex of each seedling is dissected to include the fifth node to the apical meristem. The fifth node corresponds to the third trifoliate leaf in the very early stages of development. Stipules completely envelop the leaf primordia at this time. A total of 200mg of apical tissue is harvested

and immediately frozen in liquid nitrogen. The harvested tissue is then stored at -80°C until RNA preparation.

The Soy54 (LIB3040) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) heart to torpedo stage embryo tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Seeds are collected and embryos removed from surrounding endosperm and maternal tissues. Embryos from globular to young torpedo stages (by corresponding analogy to *Arabidopsis*) are collected with a bias towards the middle of this spectrum. Embryos which are beginning to show asymmetric development of cotyledons are considered the upper developmental boundary for the collection and are excluded. A total of 12 mg embryo tissue is frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

Soy55 (LIB3049) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) young seed tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Seeds are collected from very young pods (5 to 15 days after flowering). A total of 100mg of seeds are harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

Soy56 (LIB3029) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are not converted to double stranded form and represent a non-normalized seed pool for comparison to Soy51 cDNA libraries.

TheSoy58 (LIB3050) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed root tissue subtracted from control root tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days root tissue from both drought stressed and control (watered regularly) plants are collected and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that

described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 l 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

The Soy59 (LIB3051) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) endosperm tissue. Seeds are germinated on paper towels under laboratory ambient light conditions. At 8, 10 and 14 hours after imbibition, the seed coats are harvested. The endosperm consists of a very thin layer of tissue affixed to the inside of the seed coat. The seed coat and endosperm are frozen immediately after harvest in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The Soy60 (LIB3072) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed seed plus pod subtracted from control seed plus pod tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 26°C and the nighttime temperature 21°C and 70% relative humidity. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days seeds and pods from both drought stressed and

control (watered regularly) plants are collected from the fifth and sixth node and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 l 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

The Soy61 (LIB3073) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid treated seedling subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4°C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St. Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. After 18hours, 24hours and 48 hours post

treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 l 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). For this library's construction, the eighth fraction of the cDNA size fractionation step was used for ligation.

The Soy62 (LIB3074) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid treated seedling subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4°C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St.

Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. After 18 hours, 24 hours and 48 hours post treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 1 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). For this library's construction, the ninth fraction of the cDNA size fractionation step was used for ligation.

The Soy65 (LIB3107) 07cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought-stressed abscission zone tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr

nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature 24°C. Soil is checked and watered daily to maintain even moisture conditions. Plants are irrigated with 15-16-17 Peter's Mix. At the R3 stage of development, drought is imposed by withholding water. At 3, 4, 5 and 6 days, tissue is harvested and wilting is not obvious until the fourth day. Abscission layers from reproductive organs are harvested by cutting less than one millimeter proximal and distal to the layer and immediately frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

The Soy66 (LIB3109) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) non-drought stressed abscission zone tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately24°C. Soil is checked and watered daily to maintain even moisture conditions. Plants are irrigated with 15-16-17 Peter's Mix. At 3, 4, 5 and 6 days, control abscission layer tissue is harvested. Abscission layers from reproductive organs are harvested by cutting less than one millimeter proximal and distal to the layer and immediately frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation.

Soy67 (LIB3065) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar

ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. Captured hybrids are eluted with water.

Soy68 (LIB3052) cDNA library is prepared from equal amounts tissue harvested from SOYMON007, SOYMON015 and SOYMON020 prepared tissue. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. Captured hybrids are eluted with water.

Soy69 (LIB3053) cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) normalized leaf tissue. Leaves are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29^{0}C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 30g of leaves are harvested from the 4th node of each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation. Single stranded and double stranded DNA representing approximately 1 X 10^6 colony forming units are isolated using standard protocols. RNA, complementary to the single stranded DNA, is synthesized using the double stranded DNA as a template. Biotinylated dATP is incorporated into the RNA during the

synthesis reaction. The single stranded DNA is mixed with the biotinylated RNA in a 1:10 molar ratio) and allowed to hybridize. DNA-RNA hybrids are captured on Dynabeads M280 streptavidin (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The dynabeads with captured hybrids are collected with a magnet. The non-hybridized single stranded molecules remaining after hybrid capture are converted to double stranded form and represent the primary normalized library.

Soy70 (LIB3055) cDNA library is generated from soybean cultivars Cristalina (USDA Soybean Germplasm Collection, Urbana, Illinois U.S.A.) and FT108 (Monsoy, Brazil) (tropical germ plasma) leaf tissue. Leaves are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 30g of leaves are harvested from the 4th node of each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

Soy71 (LIB3056) cDNA library is generated from soybean cultivars Cristalina and FT108 (tropical germ plasma) root tissue. Roots are harvested from plants grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 29°C and the nighttime temperature approximately 24°C. Soil is checked and watered daily to maintain even moisture conditions. Approximately 50g and 56g of roots are harvested from each of the Cristalina and FT108 cultivars and immediately frozen in dry ice. The harvested tissue is then stored at -80°C until RNA preparation.

Soy72 (LIB3093) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed leaf control tissue. Seeds

are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under 12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 26^{0}C and the nighttime temperature 21°C and 70% relative humidity. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days seeds and pods from both drought stressed and control (watered regularly) plants are collected from the fifth and sixth node and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 1 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

Soy73 (LIB3093) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) drought stressed leaf subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in an environmental chamber under

12hr daytime/12hr nighttime cycles. The daytime temperature is approximately 26°C and the nighttime temperature 21°C and 70% relative humidity. Soil is checked and watered daily to maintain even moisture conditions. At the R3 stage of the plant drought is induced by withholding water. After 3 and 6 days seeds and pods from both drought stressed and control (watered regularly) plants are collected from the fifth and sixth node and frozen in dry-ice. The harvested tissue is stored at -80°C until RNA preparation. For subtraction, target cDNA is made from the drought stressed tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 1 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.).

The Soy76 (Lib3106) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid and arachidonic treated seedling subtracted from control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4°C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the

plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St. Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. Arachidonic treated seedlings are sprayed with 1m/ml arachidonic acid in 0.1% Tween-20. After 18hours, 24hours and 48 hours post treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. The RNA from the arachidonic treated seedlings is isolated separately. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 1 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). Fraction 10 of the size fractionated cDNA is ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.) in order to capture some of the smaller transcripts characteristic of antifungal proteins.

Soy77 (LIB3108) cDNA library is generated from soybean cultivar Asgrow 3244 (Asgrow Seed Company, Des Moines, Iowa U.S.A.) jasmonic acid control tissue. Seeds are planted at a depth of approximately 2cm into 2-3 inch peat pots containing Metromix 350 medium and the plants are grown in a greenhouse. The daytime temperature is approximately 29.4^{0}C and the nighttime temperature 20°C. Soil is checked and watered daily to maintain even moisture conditions. At 9 days post planting, the plantlets are sprayed with either control buffer of 0.1% Tween-20 or jasmonic acid (Sigma J-2500, Sigma, St. Loius, Missouri U.S.A.) at 1 mg/ml in 0.1% Tween-20. Plants are sprayed until runoff and the soil and the stem is socked with the spraying solution. At 18 hours post application of jasmonic acid, the soybean plantlets appear growth retarded. Arachidonic treated seedlings are sprayed with 1m/ml arachidonic acid in 0.1% Tween-20. After 18 hours, 24 hours and 48 hours post treatment, the cotyledons are removed and the remaining leaf and stem tissue above the soil is harvested and frozen in liquid nitrogen. The harvested tissue is stored at -80°C until RNA preparation. To make RNA, the three sample timepoints were combined and ground. The RNA from the arachidonic treated seedlings is isolated separately. For subtraction, target cDNA is made from the jasmonic acid treated tissue total RNA using the SMART cDNA synthesis system from Clonetech (Clonetech Laboratories, Palo Alto, California U.S.A.). Driver first strand cDNA is covalently linked to Dynabeads following a protocol similar to that described in the Dynal literature (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.). The target cDNA is then heat denatured and the second strand trapped using Dynabeads oligo-dT. The target second strand cDNA is then hybridized to the driver cDNA in 400 1 2X SSPE for two rounds of hybridization at 65°C and 20 hours. After each hybridization, the hybridization solution is removed from the system and the hybridized target cDNA removed from the driver by heat denaturation in water. After

hybridization, the remaining cDNA is trapped with Dynabeads oligo-dT. The trapped cDNA is then amplified as in previous PCR based libraries and the resulting cDNA ligated into the pSPORT vector (Invitrogen, Carlsbad California U.S.A.). Fraction 10 of the size fractionated cDNA is ligated into the pSPORT vector in order to capture some of the smaller transcripts characteristic of antifungal proteins.

The Lib9 cDNA library is prepared from *Arabidopsis thaliana*, Columbia ecotype, leaf tissue. Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. Leaf blades were cut with sharp scissors at seven weeks after planting. The tissue was immediately frozen in liquid nitrogen. The harvested tissue is stored at -80^0C until RNA extraction. PolyA mRNA is purified from the total RNA preparation using Dynabeads® Oligo(dT)$_{25}$ (Dynal Inc., Lake Success, N.Y.), or equivalent methods. This library was normalized using a PCR-based protocol.

The Lib22 cDNA library is prepared from *Arabidopsis thaliana* Columbia ecotype, root tissue. Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. After 5-6 weeks the plants are in the reproductive growth phase. Stems are bolting from the base of the plants. After 7 weeks, more stems, floral buds appear, and a few flowers are starting to open. The 7-week old plants are rinsed intensively by tope water remove dirt from the roots, and blotted by paper towel. The tissues are immediately frozen in liquid nitrogen. The harvested tissue is stored at -80^0 C until RNA preparation.

The Lib23 cDNA library is prepared from *Arabidopsis thaliana*, Columbia ecotype, stem tissue. Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. Stems were collected seven to eight weeks after planting

by cutting the stems from the base and cutting the top of the plant to remove the floral tissue. The tissue was immediately frozen in liquid nitrogen and stored at -80'C until total RNA extraction. PolyA mRNA is purified from the total RNA preparation using Dynabeads® Oligo$(dT)_{25}$ (Dynal Inc., Lake Success, N.Y.), or equivalent methods. This library was normalized using a PCR-based protocol.

The Lib24 cDNA library is prepared from *Arabidopsis thaliana*, Columbia ecotype, flower bud tissue. Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. Flower buds are green and unopened and harvested about seven weeks after planting. The tissue is immediately frozen in liquid nitrogen. The harvested tissue is stored at -80'C until total RNA extraction. PolyA mRNA is purified from the total RNA preparation using Dynabeads® Oligo$(dT)_{25}$ (Dynal Inc., Lake Success, N.Y.), or equivalent methods. This library was normalized using a PCR-based protocol.

The Lib25 cDNA library is prepared from *Arabidopsis thaliana*, Columbia ecotype, open flower tissue. Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. Flowers are completely opened with all parts of floral structure observable, but no siliques are appearing. The tissue was immediately frozen in liquid nitrogen and stored at -80'C until total RNA extraction. PolyA mRNA is purified from the total RNA preparation using Dynabeads® Oligo$(dT)_{25}$ (Dynal Inc., Lake Success, N.Y.), or equivalent methods. This library was normalized using a PCR-based protocol.

The Lib35 cDNA library of the present invention, was prepared from *Arabidopsis thaliana* Columbia ecotype leaf tissue.Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. After 5-6 weeks the

plants are in the reproductive growth phase. Stems are bolting from the base of the plants. After 7 weeks, more stems and floral buds appeared and a few flowers were starting to open. Leaf blades were collected by cutting with sharp scissors. The tissues were immediately frozen in liquid nitrogen and stored at -80'C until use. PolyA mRNA is purified from the total RNA preparation using Dynabeads® Oligo$(dT)_{25}$ (Dynal Inc., Lake Success, N.Y.), or equivalent methods. This library was normalized using a PCR-based protocol.

The Lib146 cDNA library is prepared from *Arabidopsis thaliana*, Columbia ecotype, immature seed tissue. Wild type *Arabidopsis thaliana* seeds are planted in commonly used planting pots and grown in an environmental chamber. At approximately 7-8 weeks of age, the seeds are harvested. The seeds ranged in maturity from the smallest seeds that could be dissected from silques to just before starting to turn yellow in color. The tissue is immediately frozen in liquid nitrogen. The harvested tissue is stored at -80^0C until RNA extraction. PolyA mRNA is purified from the total RNA preparation using Dynabeads® Oligo$(dT)_{25}$ (Dynal Inc., Lake Success, N.Y.), or equivalent methods. This library is normalized using a PCR-based protocol.

The Lib3032 (Lib80) cDNA libraries are generated from *Brassica napus* seeds harvested 30 days after pollination. The cDNA libraries are constructed using the SuperScript Plasmid system for cDNA synthesis and plasmid cloning (Life Technologies, Gaithersgurg, Maryland U.S.A.) according to the manufacturers protocol with the following modification: 40 micrograms of total RNA is used as the starting material for cDNA synthesis, and first strand cDNA synthesis is carried out at 45^0C.

The Lib3034 (Lib82) cDNA libraries are generated from *Brassica napus* seeds harvested 15 and 18 days after pollination. The cDNA libraries are constructed using the SuperScript

Plasmid system for cDNA synthesis and plasmid cloning (Life Technologies, Gaithersburg, Maryland U.S.A.) according to the manufacturers protocol with the following modification: 40 micrograms of total RNA is used as the starting material for cDNA synthesis, and first strand cDNA synthesis was carried out at 45^{0}C.

The Lib3099 cDNA library is generated by a subtraction procedure. The library contains cDNAs whose abundance is enriched in the *Brassica napus* 15 and 18 day after pollination seed tissues when compared to *Brassica* leaf tissues. The cDNA synthesis is performed on *Brassica* leaf RNA and *Brassica* RNA isolated from seeds harvested 15 and 18 days after pollination using a Smart PCR cDNA synthesis kit according to the manufacturers protocol (Clontech, Palo Alto, California U.S.A.). The subtacted cDNA is generated using the Clontech PCR-Select subtaction kit according to the manufacturers protocol (Clontech, Palo Alto, California U.S.A.). The subtacted cDNA was cloned into plasmid vector pCR2.1 according to the manufacturers protocol (Invitrogen, Carlsbad, California U.S.A.).

The Lib3033 (Lib81) cDNA libraries are generated from from the *Schizochytrium* species cells. The *Schizochytrium* species cells are grown in liquid media until saturation. The culture is centrifuged to pellet the cells, the medium is decanted off, and pellet immediately frozen in liquid nitrogen. Wax esters are produced under such dark, anaerobic, rich-medium conditions. High wax production by the cultures is verified by microscopy (fluorescein staining of wax bodies) and by lipid extraction/TLC/GC. The harvested cells are stored at –80^{0}C until RNA preparation. RNA is prepared from the frozen *Euglena* cell pellet as follows. The pellet is pulverized to a powder in liquid nitrogen using a mortar and pestle. The powder is transferred to tubes containing 6 ml each of lysis buffer (100 mM Tris, pH 8, 0.6 M NaCl, 10 mM EDTA, and 4% (w/v) SDS) and buffered phenol, vortexed, and disrupted with a Polytron. The mixture is

centrifuged 20 min at 10,000xg in Corex glass tubes to separate the phases. 5 ml of the upper phase is removed, vortexed with 5 ml fresh phenol, and centrifuged. The upper phase is removed and the RNA is precipitated overnight at 4^0C by adding 1.5 volumes of 4 M LiCl. The RNA is further purified on Rneasy columns according to the manufacturers protocol (Qiagen, Valencia, California U.S.A.). The cDNA library is constructed using the SuperScript Plasmid system for cDNA synthesis and plasmid cloning (Life Technologies, Gaithersburg, Maryland U.S.A.) according to the manufacturers protocol with the following modification: 40 micrograms of total RNA was used as the starting material for cDNA synthesis, and first strand cDNA synthesis was carried out at 45^0C.

The Lib47 cDNA library is generated from *Euglena gracilus* strain 753 (ATTC No. 30285, ATCC Manasas, Virginia U.S.A.) grown in liquid culture. A liquid culture is innoculated with 1/10 volume of a previously-grown saturated culture, and the new culture for 4 days under near-anaerobic conditions (near-anaerobic cultures are not agitated, just gently swirled once a day) in the dark in 2X Beef (10 g/l bacto peptone, 4 g/l yeast extract, 2 g/l beef extract, 6 g/l glucose). The culture is then centrifuged to pellet the cells, the medium is decanted off, and pellet immediately frozen in liquid nitrogen. Wax esters are produced under such dark, anaerobic, rich-medium conditions. High wax production by the cultures is verified by microscopy (fluorescein staining of wax bodies) and by lipid extraction/TLC/GC. The harvested cells are stored at -80^0C until RNA preparation. RNA is prepared from the frozen *Euglena* cell pellet as follows. The pellet is pulverized to a powder in liquid nitrogen using a mortar and pestle. The powder is transferred to tubes containing 6 ml each of lysis buffer (100 mM Tris, pH 8, 0.6 M NaCl, 10 mM EDTA, and 4% (w/v) SDS) and buffered phenol, vortexed, and disrupted with a Polytron. The mixture is centrifuged 20 min at 10,000xg in Corex glass tubes to separate

the phases. 5 ml of the upper phase is removed, vortexed with 5 ml fresh phenol, and centrifuged. The upper phase is removed and the RNA is precipitated overnight at 4^0C by adding 1.5 volumes of 4 M LiCl. The RNA is further purified on Rneasy columns according to the manufacturers protocol (Qiagen, Valencia, California U.S.A.). The cDNA library is constructed using the SuperScript Plasmid system for cDNA synthesis and plasmid cloning (Life Technologies, Gaithersburg, Maryland U.S.A.) according to the manufacturers protocol with the following modification: 40 micrograms of total RNA was used as the starting material for cDNA synthesis, and first strand cDNA synthesis was carried out at 45^0C.

The Lib44 cDNA library is generated from *Phaeodactylum tricornatum* grown in modified Jones medium for 3 days. The cells were harvested by centrifugation and the resulting pellet frozen immediately in liquid nitrogen. The harvested cells are stored at –80^0C until RNA preparation. RNA is prepared from the frozen *Phaeodactylum* cell pellet as follows. The pellet is pulverized to a powder in liquid nitrogen using a mortar and pestle. The powder is transferred to tubes containing 6 ml each of lysis buffer (100 mM Tris, pH 8, 0.6 M NaCl, 10 mM EDTA, and 4% (w/v) SDS) and buffered phenol, vortexed, and disrupted with a Polytron. The mixture is centrifuged 20 min at 10,000xg in Corex glass tubes to separate the phases. 5 ml of the upper phase is removed, vortexed with 5 ml fresh phenol, and centrifuged. The upper phase is removed and the RNA is precipitated overnight at 4^0C by adding 1.5 volumes of 4 M LiCl. The RNA is further purified on Rneasy columns according to the manufacturers protocol (Qiagen, Valencia, California U.S.A.). The cDNA library is constructed using the SuperScript Plasmid system for cDNA synthesis and plasmid cloning (Life Technologies, Gaithersburg, Maryland U.S.A.) according to the manufacturers protocol with the following modification: 40 micrograms of total

RNA was used as the starting material for cDNA synthesis, and first strand cDNA synthesis was carried out at 45 degrees centigrade.

The LIB3036 genomic library is generated from *Mycobacterium neoaurum* US52 (ATCC No. 23072, ATCC, Manasas, Virginia U.S.A.) cells. *Mycobacterium neoaurum* US52 is a gram-positive Actinomycete bacterium. *Mycobacterium neoaurum* US52 is genetically related to Mycobacterium tuberculosis, but there is no reason to believe that it is a primary pathogen. It normally is saprophytic, i.e. it lives in soil and gets nutrients from decaying matter. Genomic DNA obtained from *Mycobacterium neoaurum* US52 is digested for various times with the restriction enzyme Sau3A. The DNA fractions are size-separated on an agarose gel, and the first fraction wherein most of the partially-digested fragments are about 10 kB is used to isolated fragments in the range of 2-3 kB. For LIB3036, the 2-3 kB DNA is cloned into vector pRY401 (Invitrogen, Carlsbad, California U.S.A.). The vector pZERO-2 (Invitrogen, Carlsbad, California U.S.A.). is used for the construction of LIB3104.

The stored RNA is purified using Trizol reagent from Life Technologies (Gibco BRL, Life Technologies, Gaithersburg, Maryland U.S.A.), essentially as recommended by the manufacturer. Poly A+ RNA (mRNA) is purified using magnetic oligo dT beads essentially as recommended by the manufacturer (Dynabeads, Dynal Corporation, Lake Success, New York U.S.A.).

Construction of plant cDNA libraries is well-known in the art and a number of cloning strategies exist. A number of cDNA library construction kits are commercially available. The Superscript™ Plasmid System for cDNA synthesis and Plasmid Cloning (Gibco BRL, Life

Technologies, Gaithersburg, Maryland U.S.A.) is used, following the conditions suggested by the manufacturer.

Normalized libraries are made using essentially the Soares procedure (Soares *et al., Proc. Natl. Acad. Sci. (U.S.A.) 91*:9228-9232 (1994), the entirety of which is herein incorporated by reference). This approach is designed to reduce the initial 10,000-fold variation in individual cDNA frequencies to achieve abundances within one order of magnitude while maintaining the overall sequence complexity of the library. In the normalization process, the prevalence of high-abundance cDNA clones decreases dramatically, clones with mid-level abundance are relatively unaffected and clones for rare transcripts are effectively increased in abundance.

Example 2

The cDNA libraries are plated on LB agar containing the appropriate antibiotics for selection and incubated at 37° for a sufficient time to allow the growth of individual colonies. Single colonies are individually placed in each well of a 96-well microtiter plates containing LB liquid including the selective antibiotics. The plates are incubated overnight at approximately 37°C with gentle shaking to promote growth of the cultures. The plasmid DNA is isolated from each clone using Qiaprep plasmid isolation kits, using the conditions recommended by the manufacturer (Qiagen Inc., Santa Clara, California U.S.A.).

Template plasmid DNA clones are used for subsequent sequencing. For sequencing, the ABI PRISM dRhodamine Terminator Cycle Sequencing Ready Reaction Kit with AmpliTaq® DNA Polymerase, FS, is used (PE Applied Biosystems, Foster City, California U.S.A.).

Example 3

Nucleic acid sequences that encode for the following proteins: triose phosphate isomerase, fructose 1,6-bisphosphate aldolase, fructose 1,6-bisphosphate, fructose 6-phosphate 2-kinase, phosphoglucoisomerase, vacuolar H^+ translocating-pyrophosphatase, pyrophosphate-dependent fructose-6-phosphate phosphotransferase, invertase, sucrose synthase, hexokinase, fructokinase, NDP-kinase, glucose-6-phosphate 1-dehydrogenase, phosphoglucomutase and UDP-glucose pyrophophorylase are identified from the Monsanto EST PhytoSeq database using TBLASTN (default values)(TBLASTN compares a protein query against the six reading frames of a nucleic acid sequence). Matches found with BLAST P values equal or less than 0.001 (probability) or BLAST Score of equal or greater than 90 are classified as hits. If the program used to determine the hit is HMMSW then the score refers to HMMSW score.

In addition, the GenBank database is searched with BLASTN and BLASTX (default values) using ESTs as queries. EST that pass the hit probability threshold of $10e^{-8}$ for the following enzymes are combined with the hits generated by using TBLASTN (described above) and classified by enzyme (see Table A below).

A cluster refers to a set of overlapping clones in the PhytoSeq database. Such an overlapping relationship among clones is designated as a "cluster" when BLAST scores from pairwise sequence comparisons of the member clones meets a predetermined minimum value or product score of 50 or more (Product Score = (BLAST SCORE x Percentage Identity)/(5 x minimum [length (Seq1), length (Seq2)]))

Since clusters are formed on the basis of single-linkage relationships, it is possible for two non-overlapping clones to be members of the same cluster if, for instance, they both overlap a third clone with at least the predetermined minimum BLAST score (stringency). A cluster ID

is arbitrarily assigned to all of those clones which belong to the same cluster at a given stringency and a particular clone will belong to only one cluster at a given stringency. If a cluster contains only a single clone (a "singleton"), then the cluster ID number will be negative, with an absolute value equal to the clone ID number of its single member. Clones grouped in a cluster in most cases represent a contiguous sequence.

TABLE A*

MAIZE TRIOSE PHOSPHATE ISOMERASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1	-700019675	700019675H1	SATMON001	g546735	BLASTX	134	1e-11	78
2	-700073894	700073894H1	SATMON007	g609261	BLASTN	257	1e-10	84
3	-700167260	700167260H1	SATMON013	g609261	BLASTN	644	1e-44	79
4	-700380595	700380595H1	SATMON021	g609261	BLASTN	1121	1e-84	87
5	-700449667	700449667H1	SATMON028	g217973	BLASTN	204	1e-18	93
6	-700449720	700449720H2	SATMON028	g217973	BLASTN	216	1e-18	88
7	-700570661	700570661H1	SATMON030	g168647	BLASTX	131	1e-11	88
8	-700616770	700616770H1	SATMON033	g407525	BLASTX	149	1e-13	83
9	-701170944	701170944H1	SATMONN05	g217921	BLASTX	188	1e-20	53
10	11337	700337974H1	SATMON020	g256119	BLASTN	535	1e-61	78
11	11337	700027829H1	SATMON003	g256119	BLASTN	726	1e-51	80
12	126	700050046H1	SATMON003	g1785947	BLASTN	440	1e-26	92
13	282	700077320H1	SATMON007	g217973	BLASTN	666	1e-108	97
14	282	700104541H1	SATMON010	g217973	BLASTN	631	1e-106	97
15	282	700047476H1	SATMON003	g217973	BLASTN	648	1e-105	97
16	282	700211559H1	SATMON016	g217973	BLASTN	525	1e-104	97
17	282	700073553H1	SATMON007	g217973	BLASTN	981	1e-103	98
18	282	700613011H1	SATMON033	g217973	BLASTN	552	1e-102	98
19	282	700352119H1	SATMON023	g217973	BLASTN	666	1e-101	97
20	282	700088148H1	SATMON011	g217973	BLASTN	666	1e-100	98
21	282	700351626H1	SATMON023	g217973	BLASTN	401	1e-99	98
22	282	700240096H1	SATMON010	g217973	BLASTN	666	1e-98	97
23	282	700083660H1	SATMON011	g217973	BLASTN	666	1e-97	99
24	282	700208721H1	SATMON016	g217973	BLASTN	497	1e-96	98
25	282	700203144H1	SATMON003	g217973	BLASTN	511	1e-96	96
26	282	700430425H1	SATMONN01	g217973	BLASTN	666	1e-96	98
27	282	700206091H1	SATMON003	g217973	BLASTN	497	1e-94	97
28	282	700077017H1	SATMON007	g217973	BLASTN	614	1e-93	93
29	282	700618792H1	SATMON034	g217973	BLASTN	546	1e-92	96
30	282	700572532H1	SATMON030	g407524	BLASTN	1212	1e-92	84
31	282	700106512H1	SATMON010	g217973	BLASTN	632	1e-91	97
32	282	700195031H1	SATMON014	g217973	BLASTN	471	1e-90	97
33	282	700168131H1	SATMON013	g217973	BLASTN	497	1e-89	98
34	282	700197039H1	SATMON014	g217973	BLASTN	546	1e-89	98
35	282	700572688H1	SATMON030	g169820	BLASTN	1114	1e-89	85
36	282	700021313H1	SATMON001	g217973	BLASTN	913	1e-87	97
37	282	700452417H1	SATMON028	g217973	BLASTN	425	1e-86	95
38	282	700346119H1	SATMON021	g217973	BLASTN	444	1e-86	96
39	282	700082359H1	SATMON011	g217973	BLASTN	542	1e-86	93
40	282	700240042H1	SATMON010	g217973	BLASTN	596	1e-86	97
41	282	700030064H1	SATMON003	g217973	BLASTN	587	1e-85	94
42	282	700615185H1	SATMON033	g217973	BLASTN	430	1e-84	98
43	282	700196125H1	SATMON014	g217973	BLASTN	581	1e-84	100
44	282	700243429H1	SATMON010	g217973	BLASTN	632	1e-84	97
45	282	700474112H1	SATMON025	g217973	BLASTN	570	1e-83	98
46	282	700572282H1	SATMON030	g407524	BLASTN	838	1e-83	82
47	282	700622238H1	SATMON034	g169820	BLASTN	917	1e-80	86
48	282	700095609H1	SATMON008	g169820	BLASTN	1067	1e-80	82

49	282	700218886H1	SATMON011	g217973	BLASTN	551	1e-79	93
50	282	700018688H1	SATMON001	g217973	BLASTN	1066	1e-79	99
51	282	700049775H1	SATMON003	g217973	BLASTN	362	1e-78	91
52	282	700575972H1	SATMON030	g169820	BLASTN	894	1e-78	79
53	282	700215519H1	SATMON016	g217973	BLASTN	497	1e-76	97
54	282	700161120H1	SATMON012	g217973	BLASTN	622	1e-76	98
55	282	700581760H1	SATMON031	g217973	BLASTN	533	1e-75	90
56	282	700104672H1	SATMON010	g169820	BLASTN	1012	1e-75	83
57	282	700346053H1	SATMON021	g169820	BLASTN	1012	1e-75	83
58	282	701166592H1	SATMONN04	g217973	BLASTN	661	1e-74	95
59	282	700968667H1	SATMONN04	g217973	BLASTN	497	1e-73	92
60	282	700205627H1	SATMON003	g217973	BLASTN	666	1e-73	99
61	282	700029005H1	SATMON003	g169820	BLASTN	979	1e-72	85
62	282	700476479H1	SATMON025	g169820	BLASTN	554	1e-71	84
63	282	700050148H1	SATMON003	g169820	BLASTN	608	1e-70	83
64	282	700259846H1	SATMON017	g217973	BLASTN	283	1e-69	94
65	282	700344093H1	SATMON021	g169820	BLASTN	934	1e-69	83
66	282	700082327H1	SATMON011	g169820	BLASTN	943	1e-69	85
67	282	700020156H1	SATMON001	g217973	BLASTN	420	1e-68	99
68	282	700577714H1	SATMON031	g169820	BLASTN	928	1e-68	85
69	282	700104904H1	SATMON010	g169820	BLASTN	913	1e-67	84
70	282	700104685H1	SATMON010	g169820	BLASTN	897	1e-66	84
71	282	700053463H1	SATMON009	g169820	BLASTN	907	1e-66	85
72	282	700171639H1	SATMON013	g217973	BLASTN	401	1e-65	98
73	282	700574233H1	SATMON030	g169820	BLASTN	651	1e-65	83
74	282	700262653H1	SATMON017	g169820	BLASTN	877	1e-64	84
75	282	700456738H1	SATMON029	g169820	BLASTN	877	1e-64	84
76	282	700611806H1	SATMON022	g169820	BLASTN	877	1e-64	83
77	282	700381177H1	SATMON023	g169820	BLASTN	884	1e-64	84
78	282	700103347H1	SATMON010	g169820	BLASTN	861	1e-63	84
79	282	700103605H1	SATMON010	g169820	BLASTN	868	1e-63	84
80	282	700578536H1	SATMON031	g169820	BLASTN	856	1e-62	84
81	282	700258606H1	SATMON017	g169820	BLASTN	807	1e-61	83
82	282	700335703H1	SATMON019	g217973	BLASTN	376	1e-60	90
83	282	700351044H1	SATMON023	g169820	BLASTN	471	1e-59	83
84	282	700346364H1	SATMON021	g169820	BLASTN	813	1e-59	85
85	282	700619037H1	SATMON034	g169820	BLASTN	814	1e-59	84
86	282	700465160H1	SATMON025	g169820	BLASTN	751	1e-57	84
87	282	700235687H1	SATMON010	g169820	BLASTN	791	1e-57	82
88	282	700105645H1	SATMON010	g169820	BLASTN	793	1e-57	83
89	282	700082237H1	SATMON011	g169820	BLASTN	793	1e-57	84
90	282	700261906H1	SATMON017	g169820	BLASTN	796	1e-57	83
91	282	700456154H1	SATMON029	g169820	BLASTN	799	1e-57	84
92	282	700047696H1	SATMON003	g169820	BLASTN	561	1e-56	83
93	282	700449905H1	SATMON028	g169820	BLASTN	788	1e-56	84
94	282	700336106H1	SATMON019	g217973	BLASTN	325	1e-55	92
95	282	700381867H1	SATMON023	g2529386	BLASTN	422	1e-55	97
96	282	700051335H1	SATMON003	g169820	BLASTN	608	1e-55	83
97	282	700050988H1	SATMON003	g169820	BLASTN	768	1e-55	86
98	282	700029471H1	SATMON003	g169820	BLASTN	772	1e-55	84
99	282	700106806H1	SATMON010	g169820	BLASTN	773	1e-55	84
100	282	700071749H1	SATMON007	g217973	BLASTN	362	1e-54	85
101	282	700207607H1	SATMON016	g217973	BLASTN	362	1e-54	85
102	282	700573465H2	SATMON030	g169820	BLASTN	753	1e-54	86

103	282	700220908H1	SATMON011	g169820	BLASTN	758	1e-54	84
104	282	700467719H1	SATMON025	g169820	BLASTN	761	1e-54	85
105	282	700456018H1	SATMON029	g169820	BLASTN	764	1e-54	81
106	282	700453767H1	SATMON029	g217973	BLASTN	296	1e-52	94
107	282	700026118H1	SATMON003	g217973	BLASTN	341	1e-52	93
108	282	700026760H1	SATMON003	g217973	BLASTN	421	1e-52	99
109	282	700029525H1	SATMON003	g169820	BLASTN	738	1e-52	85
110	282	700457972H1	SATMON029	g169820	BLASTN	723	1e-51	85
111	282	700455866H1	SATMON029	g169820	BLASTN	726	1e-51	84
112	282	700165290H1	SATMON013	g169820	BLASTN	726	1e-51	84
113	282	700351190H1	SATMON023	g169820	BLASTN	672	1e-50	81
114	282	700154095H1	SATMON007	g169820	BLASTN	696	1e-49	84
115	282	700450438H1	SATMON028	g217973	BLASTN	430	1e-48	99
116	282	700044892H1	SATMON004	g169820	BLASTN	683	1e-48	85
117	282	700185095H1	SATMON014	g169820	BLASTN	673	1e-47	84
118	282	700575506H1	SATMON030	g169820	BLASTN	680	1e-47	83
119	282	700161966H1	SATMON012	g217973	BLASTN	335	1e-46	98
120	282	700343401H1	SATMON021	g169820	BLASTN	426	1e-45	77
121	282	700152354H1	SATMON007	g169820	BLASTN	653	1e-45	84
122	282	701164924H1	SATMONN04	g169820	BLASTN	397	1e-44	84
123	282	700346896H1	SATMON021	g169820	BLASTN	496	1e-42	84
124	282	700210157H1	SATMON016	g169820	BLASTN	617	1e-42	84
125	282	700383103H1	SATMON024	g169820	BLASTN	531	1e-41	84
126	282	701158829H1	SATMONN04	g407524	BLASTN	549	1e-40	80
127	282	700619883H1	SATMON034	g217973	BLASTN	325	1e-38	99
128	282	700168219H1	SATMON013	g169820	BLASTN	540	1e-36	83
129	282	700155210H1	SATMON007	g169820	BLASTN	545	1e-36	83
130	282	700334861H1	SATMON019	g169820	BLASTN	484	1e-31	82
131	282	700355663H1	SATMON024	g217973	BLASTN	213	1e-30	88
132	282	700074764H1	SATMON007	g546734	BLASTN	387	1e-27	84
133	282	700621934H1	SATMON034	g217973	BLASTN	430	1e-26	100
134	282	700802084H1	SATMON036	g217973	BLASTN	270	1e-24	98
135	3039	700620444H1	SATMON034	g1785947	BLASTN	473	1e-56	75
136	3039	700356205H1	SATMON024	g1785947	BLASTN	332	1e-32	72
137	3039	700215549H1	SATMON016	g414549	BLASTN	443	1e-26	72
138	3039	700620318H1	SATMON034	g556171	BLASTX	214	1e-25	79
139	3039	700028742H1	SATMON003	g556171	BLASTX	156	1e-20	86
140	3039	700150060H1	SATMON007	g556171	BLASTX	181	1e-17	89
141	3039	700448477H1	SATMON027	g556171	BLASTX	137	1e-12	85
142	3039	700336489H1	SATMON019	g556171	BLASTX	126	1e-10	81
143	3414	700099709H1	SATMON009	g609261	BLASTN	600	1e-49	84
144	3414	700075837H1	SATMON007	g609261	BLASTN	494	1e-41	84
145	3414	700045678H1	SATMON004	g609261	BLASTN	340	1e-29	73
146	3414	700097852H1	SATMON009	g609261	BLASTN	436	1e-27	84
147	3414	700053342H1	SATMON009	g609261	BLASTN	346	1e-25	73
148	3414	700041954H1	SATMON004	g609261	BLASTN	340	1e-24	82
149	3414	700217471H1	SATMON016	g609261	BLASTN	265	1e-21	71
150	3414	700264437H1	SATMON017	g609261	BLASTN	231	1e-17	69
151	3414	700218371H1	SATMON016	g609261	BLASTN	156	1e-10	68
152	5593	700381686H1	SATMON023	g609261	BLASTN	534	1e-44	89
153	5593	700356082H1	SATMON024	g609261	BLASTN	246	1e-24	90
154	5593	700622077H1	SATMON034	g609261	BLASTN	292	1e-20	86
155	5593	700470822H1	SATMON025	g609262	BLASTX	134	1e-11	79
156	6525	700083139H1	SATMON011	g256119	BLASTN	880	1e-64	76

157	6525	700205474H1	SATMON003	g169820	BLASTN	849	1e-62	77
158	6991	700336856H1	SATMON019	g609261	BLASTN	1131	1e-85	85
159	6991	700042717H1	SATMON004	g609261	BLASTN	1028	1e-76	85
160	6991	700379491H1	SATMON020	g609261	BLASTN	995	1e-74	81
161	6991	700156635H1	SATMON012	g609261	BLASTN	877	1e-64	84
162	6991	700046340H1	SATMON004	g609261	BLASTN	852	1e-62	84
163	6991	700081869H1	SATMON011	g609261	BLASTN	266	1e-14	80
164	6991	700426102H1	SATMONN01	g806312	BLASTX	134	1e-13	89
165	7384	700613626H1	SATMON033	g609261	BLASTN	920	1e-87	85
166	7384	700101506H1	SATMON009	g609261	BLASTN	1124	1e-84	85
167	7384	700206445H1	SATMON003	g609261	BLASTN	987	1e-73	79
168	7384	700220160H1	SATMON011	g609261	BLASTN	878	1e-64	85
169	-L1431527	LIB143-004-Q1-E1-C5	LIB143	g217973	BLASTN	290	1e-13	93
170	-L30613868	LIB3061-017-Q1-K1-C9	LIB3061	g217973	BLASTN	182	1e-13	70
171	-L30623620	LIB3062-034-Q1-K1-A8	LIB3062	g609261	BLASTN	599	1e-39	74
172	-L361705	LIB36-021-Q1-E1-E7	LIB36	g609261	BLASTN	266	1e-14	80
173	23992	LIB3062-056-Q1-K1-F9	LIB3062	g1200507	BLASTX	285	1e-64	61
174	282	LIB3067-047-Q1-K1-H2	LIB3067	g217973	BLASTN	1076	1e-164	96
175	282	LIB3067-055-Q1-K1-G8	LIB3067	g217973	BLASTN	1076	1e-133	93
176	282	LIB3067-059-Q1-K1-D10	LIB3067	g169820	BLASTN	1401	1e-115	84
177	282	LIB3067-027-Q1-K1-B10	LIB3067	g407524	BLASTN	995	1e-113	83
178	282	LIB189-032-Q1-E1-H2	LIB189	g217973	BLASTN	629	1e-111	93
179	282	LIB3059-023-Q1-K1-A7	LIB3059	g407524	BLASTN	1436	1e-111	83
180	282	LIB3069-016-Q1-K1-D9	LIB3069	g169820	BLASTN	1301	1e-107	81
181	282	LIB143-006-Q1-E1-A8	LIB143	g169820	BLASTN	1373	1e-105	84
182	282	LIB3068-054-Q1-K1-C11	LIB3068	g169820	BLASTN	1327	1e-102	82
183	282	LIB3067-034-Q1-K1-B7	LIB3067	g407524	BLASTN	1321	1e-101	83
184	282	LIB143-031-Q1-E1-E5	LIB143	g169820	BLASTN	1311	1e-100	84
185	282	LIB3069-055-Q1-K1-H12	LIB3069	g169820	BLASTN	1046	1e-97	75
186	282	LIB3061-027-Q1-K1-A8	LIB3061	g169820	BLASTN	936	1e-96	83
187	282	LIB3078-008-Q1-K1-E5	LIB3078	g169820	BLASTN	1210	1e-92	82
188	282	LIB3066-027-Q1-K1-E1	LIB3066	g407524	BLASTN	1196	1e-91	82
189	282	LIB3067-032-Q1-K1-E5	LIB3067	g169820	BLASTN	1122	1e-84	84

190	282	LIB3078-029-Q1-K1-F7	LIB3078	g169820	BLASTN	827	1e-83	82
191	282	LIB3061-006-Q1-K1-B7	LIB3061	g169820	BLASTN	1091	1e-82	78
192	282	LIB143-048-Q1-E1-F8	LIB143	g169820	BLASTN	644	1e-74	75
193	282	LIB3078-033-Q1-K1-B10	LIB3078	g169820	BLASTN	584	1e-73	79
194	282	LIB3069-046-Q1-K1-C4	LIB3069	g169820	BLASTN	819	1e-59	79
195	282	LIB3061-049-Q1-K1-H2	LIB3061	g169820	BLASTN	587	1e-47	80
196	282	LIB143-029-Q1-E1-G4	LIB143	g169820	BLASTN	679	1e-47	84
197	282	LIB84-027-Q1-E1-E5	LIB84	g169820	BLASTN	613	1e-46	78
198	282	LIB3062-001-Q1-K2-F7	LIB3062	g169820	BLASTN	507	1e-33	80
199	282	LIB3066-014-Q1-K1-H11	LIB3066	g169820	BLASTN	385	1e-25	76
200	29645	LIB3069-014-Q1-K1-C11	LIB3069	g168647	BLASTX	131	1e-27	34
201	29645	LIB3069-013-Q1-K1-C11	LIB3069	g168647	BLASTX	124	1e-24	33
202	3039	LIB3062-045-Q1-K1-F6	LIB3062	g1785947	BLASTN	1119	1e-84	72
203	5593	LIB3067-045-Q1-K1-E5	LIB3067	g609261	BLASTN	702	1e-58	75
204	6991	LIB3059-026-Q1-K1-G9	LIB3059	g609261	BLASTN	1493	1e-115	84
205	6991	LIB3078-049-Q1-K1-E4	LIB3078	g609261	BLASTN	747	1e-55	83
206	7384	LIB3062-034-Q1-K1-A4	LIB3062	g609261	BLASTN	1351	1e-107	85

MAIZE FRUCTOSE 1,6-BISPHOSPHATE ALDOLASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
207	-700026544	700026544H1	SATMON003	g22144	BLASTN	215	1e-30	88
208	-700073329	700073329H1	SATMON007	g22144	BLASTN	590	1e-89	95
209	-700151987	700151987H1	SATMON007	g22144	BLASTN	212	1e-8	78
210	-700206575	700206575H1	SATMON003	g22144	BLASTN	1009	1e-109	96
211	-700333727	700333727H1	SATMON019	g1217893	BLASTX	154	1e-16	61
212	-700429795	700429795H1	SATMONN01	g1619605	BLASTX	102	1e-16	77
213	-700804137	700804137H1	SATMON036	g22144	BLASTN	742	1e-52	92
214	1182	700449930H1	SATMON028	g22632	BLASTN	856	1e-62	79
215	1182	701185559H1	SATMONN06	g22632	BLASTN	793	1e-57	79
216	1182	700203130H1	SATMON003	g22632	BLASTN	799	1e-57	78
217	1182	700083459H1	SATMON011	g22632	BLASTN	800	1e-57	76
218	1182	700465449H1	SATMON025	g22632	BLASTN	405	1e-50	76
219	1182	701165344H1	SATMONN04	g22632	BLASTN	326	1e-29	78
220	1182	700427538H1	SATMONN01	g438275	BLASTX	96	1e-9	88
221	38	700224356H1	SATMON011	g22144	BLASTN	1290	1e-98	96

222	38	700048169H1	SATMON003	g22144	BLASTN	528	1e-72	98
223	38	700616610H1	SATMON033	g22144	BLASTN	278	1e-31	91
224	38	700355765H1	SATMON024	g20204	BLASTX	141	1e-12	96
225	6547	700194431H1	SATMON014	g2636513	BLASTX	181	1e-17	47
226	6547	700469777H1	SATMON025	g2636513	BLASTX	174	1e-16	48
227	8494	700425929H1	SATMONN01	g927507	BLASTX	67	1e-11	89
228	-L30603643	LIB3060-046-Q1-K1-G7	LIB3060	g169037	BLASTX	155	1e-44	66
229	1182	LIB3079-006-Q1-K1-H8	LIB3079	g22632	BLASTN	598	1e-39	65
230	28633	LIB3062-015-Q1-K1-G12	LIB3062	g1208898	BLASTX	116	1e-24	45
231	38	LIB3061-025-Q1-K1-C9	LIB3061	g22144	BLASTN	895	1e-133	94
232	38	LIB3059-020-Q1-K1-H3	LIB3059	g22144	BLASTN	745	1e-53	98

MAIZE FRUCTOSE-1,6-BISPHOSPHATASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
233	-700262935	700262935H1	SATMON017	g3041775	BLASTX	184	1e-18	94
234	-700432173	700432173H1	SATMONN01	g1790679	BLASTX	123	1e-16	56
235	-700455709	700455709H1	SATMON029	g3041776	BLASTN	597	1e-40	85
236	-700573083	700573083H1	SATMON030	g3041775	BLASTX	69	1e-10	64
237	12846	700101851H1	SATMON009	g3041776	BLASTN	1312	1e-100	91
238	12846	700101541H1	SATMON009	g3041776	BLASTN	1252	1e-95	90
239	12846	700581510H1	SATMON031	g3041776	BLASTN	872	1e-82	90
240	15627	700046054H1	SATMON004	g21736	BLASTN	1213	1e-92	91
241	15627	700421605H1	SATMONN01	g3041776	BLASTN	664	1e-77	90
242	15627	700445495H1	SATMON027	g21736	BLASTN	1004	1e-74	84
243	15627	700042188H1	SATMON004	g3041776	BLASTN	875	1e-64	88
244	16870	700100752H1	SATMON009	g3041776	BLASTN	257	1e-33	75
245	16870	700044805H1	SATMON004	g3041776	BLASTN	194	1e-14	76
246	16870	700099217H1	SATMON009	g21736	BLASTN	246	1e-9	59
247	5480	700442189H1	SATMON026	g3041774	BLASTN	536	1e-54	93
248	8243	700264654H1	SATMON017	g3041774	BLASTN	942	1e-69	84
249	8243	700479624H1	SATMON034	g3041774	BLASTN	902	1e-66	82
250	8243	700448974H1	SATMON028	g3041774	BLASTN	876	1e-64	84
251	-L1485381	LIB148-057-Q1-E1-E6	LIB148	g440591	BLASTX	80	1e-30	63
252	-L30662839	LIB3066-035-Q1-K1-F11	LIB3066	g3041774	BLASTN	215	1e-15	77
253	-L362913	LIB36-013-Q1-E1-D10	LIB36	g3041776	BLASTN	937	1e-69	88
254	-L832444	LIB83-005-Q1-E1-D2	LIB83	g3041776	BLASTN	575	1e-37	93
255	12846	LIB83-008-Q1-E1-A8	LIB83	g3041776	BLASTN	1610	1e-135	92
256	12846	LIB3078-003-Q1-K1-C7	LIB3078	g3041776	BLASTN	873	1e-98	93
257	16870	LIB3060-052-Q1-K1-D11	LIB3060	g21736	BLASTN	377	1e-66	70
258	26002	LIB83-008-	LIB83	g3041776	BLASTN	378	1e-20	86

Q1-E1-B10

MAIZE FRUCTOSE-6-PHOSPHATE,2-KINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
259	-700093724	700093724H1	SATMON008	g3170230	BLASTX	123	1e-21	53
260	-700099547	700099547H1	SATMON009	g3309582	BLASTN	630	1e-43	80
261	-700100682	700100682H1	SATMON009	g3170230	BLASTX	269	1e-39	65
262	-700173085	700173085H1	SATMON013	g2286154	BLASTN	1165	1e-88	100
263	-700217623	700217623H1	SATMON016	g3170229	BLASTN	593	1e-40	73
264	-700219340	700219340H1	SATMON011	g3170230	BLASTX	190	1e-20	56
265	-700265353	700265353H1	SATMON017	g2286154	BLASTN	1268	1e-107	98
266	-700379777	700379777H1	SATMON021	g3309582	BLASTN	905	1e-66	76
267	-700620963	700620963H1	SATMON034	g2286154	BLASTN	376	1e-52	85
268	-701159590	701159590H1	SATMONN04	g3309582	BLASTN	682	1e-48	73
269	20094	700209789H1	SATMON016	g2286154	BLASTN	1093	1e-96	92
270	20094	700550375H1	SATMON022	g3309582	BLASTN	780	1e-58	81
271	29193	700021150H1	SATMON001	g2286154	BLASTN	466	1e-75	92
272	-L30593297	LIB3059-029-Q1-K1-B3	LIB3059	g2286154	BLASTN	401	1e-22	70
273	-L30614892	LIB3061-021-Q1-K1-G9	LIB3061	g2286154	BLASTN	469	1e-38	79
274	-L30623700	LIB3062-031-Q1-K1-E8	LIB3062	g3170229	BLASTN	230	1e-10	70
275	29193	LIB83-007-Q1-E1-C11	LIB83	g2286154	BLASTN	595	1e-113	90

MAIZE PHOSPHOGLUCOISOMERASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
276	-700086021	700086021H1	SATMON011	g1100771	BLASTX	225	1e-28	51
277	-700169489	700169489H1	SATMON013	g1100771	BLASTX	152	1e-13	59
278	-700222638	700222638H1	SATMON011	g1100771	BLASTX	256	1e-28	60
279	-700445574	700445574H1	SATMON027	g1100771	BLASTX	143	1e-12	54
280	-700475232	700475232H1	SATMON025	g596022	BLASTN	845	1e-61	90
281	-700612774	700612774H1	SATMON033	g596022	BLASTN	1574	1e-122	95
282	14393	700222547H1	SATMON011	g1100771	BLASTX	239	1e-25	60
283	14393	700220357H1	SATMON011	g1100771	BLASTX	218	1e-23	68
284	14393	700050317H1	SATMON003	g1100771	BLASTX	120	1e-22	63
285	14393	700163544H1	SATMON013	g1100771	BLASTX	214	1e-22	62
286	15724	700207164H1	SATMON017	g1100771	BLASTX	135	1e-17	67
287	15724	700552402H1	SATMON022	g1100771	BLASTX	135	1e-11	60
288	15724	700086085H1	SATMON011	g1100771	BLASTX	137	1e-11	45
289	20643	700577051H1	SATMON031	g1100771	BLASTX	241	1e-26	66
290	20643	700201592H1	SATMON003	g1100771	BLASTX	113	1e-19	45
291	20643	700576644H1	SATMON030	g1100771	BLASTX	113	1e-17	43
292	2351	700208928H1	SATMON016	g1100771	BLASTX	274	1e-43	73
293	2351	700240758H1	SATMON010	g1100771	BLASTX	283	1e-43	79
294	2351	700352502H1	SATMON023	g1100771	BLASTX	197	1e-36	70
295	2351	700581930H1	SATMON031	g1100771	BLASTX	164	1e-34	72
296	2351	700028642H1	SATMON003	g1100771	BLASTX	294	1e-33	65
297	2351	700106092H1	SATMON010	g1100771	BLASTX	294	1e-33	62
298	2351	700082102H1	SATMON011	g1100771	BLASTX	300	1e-33	62

299	2351	700083446H1	SATMON011	g1100771	BLASTX	274	1e-30	65
300	2351	700580585H1	SATMON031	g1100771	BLASTX	163	1e-29	69
301	2351	700550608H1	SATMON022	g1100771	BLASTX	265	1e-29	61
302	2351	700106079H1	SATMON010	g1100771	BLASTX	261	1e-28	54
303	2351	700244248H1	SATMON010	g1100771	BLASTX	238	1e-25	67
304	2351	700152233H1	SATMON007	g1100771	BLASTX	167	1e-22	72
305	2351	700455043H1	SATMON029	g1100771	BLASTX	168	1e-21	68
306	2351	700615809H1	SATMON033	g1100771	BLASTX	207	1e-21	66
307	2351	701165320H1	SATMONN04	g1100771	BLASTX	122	1e-14	63
308	32930	700042996H1	SATMON004	g596022	BLASTN	476	1e-95	98
309	4222	700222539H1	SATMON011	g596022	BLASTN	1160	1e-87	100
310	4222	700104023H1	SATMON010	g596022	BLASTN	1060	1e-84	100
311	4222	700101580H1	SATMON009	g596022	BLASTN	871	1e-74	99
312	4222	700473395H1	SATMON025	g596022	BLASTN	368	1e-46	95
313	4222	700800179H1	SATMON036	g596022	BLASTN	240	1e-11	100
314	8858	700221523H1	SATMON011	g1100771	BLASTX	278	1e-31	59
315	895	700100965H1	SATMON009	g596022	BLASTN	1611	1e-125	99
316	895	700620985H1	SATMON034	g596022	BLASTN	1418	1e-114	98
317	895	700082062H1	SATMON011	g596022	BLASTN	1365	1e-110	97
318	895	700573782H1	SATMON030	g596022	BLASTN	920	1e-107	98
319	895	700236138H1	SATMON010	g596022	BLASTN	1395	1e-107	100
320	895	700086336H1	SATMON011	g596022	BLASTN	1370	1e-105	100
321	895	700801467H1	SATMON036	g596022	BLASTN	1249	1e-99	95
322	895	700801458H1	SATMON036	g596022	BLASTN	1245	1e-98	100
323	895	700475024H1	SATMON025	g596022	BLASTN	1162	1e-97	93
324	895	700243164H1	SATMON010	g596022	BLASTN	1105	1e-96	100
325	895	700804665H1	SATMON036	g596022	BLASTN	1266	1e-96	99
326	895	700021931H1	SATMON001	g596022	BLASTN	1126	1e-84	99
327	895	700805540H1	SATMON036	g596022	BLASTN	776	1e-55	99
328	895	700172576H1	SATMON013	g596022	BLASTN	571	1e-38	98
329	895	700105116H1	SATMON010	g596022	BLASTN	558	1e-37	99
330	895	700472931H1	SATMON025	g596022	BLASTN	379	1e-31	97
331	20643	LIB3069-009-Q1-K1-B3	LIB3069	g1100771	BLASTX	215	1e-44	50
332	2351	LIB3079-007-Q1-K1-C11	LIB3079	g1100771	BLASTX	304	1e-77	72
333	32930	LIB189-001-Q1-E1-E4	LIB189	g596022	BLASTN	794	1e-115	95
334	4222	LIB3079-001-Q1-K1-H7	LIB3079	g596022	BLASTN	1132	1e-101	89
335	895	LIB148-049-Q1-E1-D6	LIB148	g596022	BLASTN	2194	1e-178	97
336	895	LIB3066-052-Q1-K1-G8	LIB3066	g596022	BLASTN	2178	1e-172	97
337	895	LIB148-016-Q1-E1-G5	LIB148	g596022	BLASTN	1567	1e-161	99
338	895	LIB143-032-Q1-E1-E10	LIB143	g596022	BLASTN	1914	1e-155	99
339	895	LIB3061-013-Q1-K1-F7	LIB3061	g596022	BLASTN	1738	1e-136	88
340	895	LIB143-047-Q1-E1-D4	LIB143	g596022	BLASTN	1490	1e-119	88

MAIZE VACUOLAR H+-TRANSLOCATING-PYROPHOSPHATASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
341	-700163331	700163331H1	SATMON013	g534915	BLASTN	751	1e-53	77
342	-700171438	700171438H1	SATMON013	g2258073	BLASTN	256	1e-10	76
343	-700202576	700202576H1	SATMON003	g2668746	BLASTX	214	1e-23	84
344	-700206487	700206487H1	SATMON003	g2570501	BLASTX	174	1e-17	86
345	-700217292	700217292H1	SATMON016	g2668746	BLASTX	214	1e-23	100
346	-700240889	700240889H1	SATMON010	g2570500	BLASTN	639	1e-47	84
347	-700347658	700347658H1	SATMON023	g2668746	BLASTX	215	1e-23	95
348	-700454151	700454151H1	SATMON029	g2668745	BLASTN	172	1e-10	90
349	-700454532	700454532H1	SATMON029	g2668745	BLASTN	259	1e-38	93
350	-700552133	700552133H1	SATMON022	g457744	BLASTX	176	1e-19	68
351	-700611864	700611864H1	SATMON022	g2668745	BLASTN	203	1e-9	84
352	107	700622451H1	SATMON034	g2668745	BLASTN	1645	1e-129	100
353	107	700571235H1	SATMON030	g2668745	BLASTN	1406	1e-125	98
354	107	700266126H1	SATMON017	g2668745	BLASTN	1145	1e-121	100
355	107	700621607H1	SATMON034	g2668745	BLASTN	1375	1e-121	99
356	107	700345080H1	SATMON021	g2668745	BLASTN	1195	1e-117	100
357	107	700624257H1	SATMON034	g2668745	BLASTN	825	1e-115	100
358	107	700030359H1	SATMON003	g2668745	BLASTN	1470	1e-114	100
359	107	700214462H1	SATMON016	g2668745	BLASTN	1223	1e-110	98
360	107	700356050H1	SATMON024	g2668745	BLASTN	1430	1e-110	100
361	107	701181128H1	SATMONN06	g2668745	BLASTN	1368	1e-105	98
362	107	700349795H1	SATMON023	g2668745	BLASTN	1370	1e-105	95
363	107	700473278H1	SATMON025	g2668745	BLASTN	1355	1e-104	100
364	107	700157057H1	SATMON012	g2668745	BLASTN	1345	1e-103	100
365	107	700622505H1	SATMON034	g2668745	BLASTN	762	1e-100	96
366	107	700219661H1	SATMON011	g2668745	BLASTN	942	1e-98	99
367	107	700619032H1	SATMON034	g2668745	BLASTN	989	1e-98	96
368	107	700620065H1	SATMON034	g2668745	BLASTN	1069	1e-98	94
369	107	700569179H1	SATMON030	g2668745	BLASTN	1233	1e-97	98
370	107	700156773H1	SATMON012	g2668745	BLASTN	1276	1e-97	99
371	107	700207120H1	SATMON017	g2668745	BLASTN	740	1e-96	99
372	107	700030407H1	SATMON003	g2668745	BLASTN	480	1e-95	98
373	107	700457309H1	SATMON029	g2668745	BLASTN	979	1e-95	99
374	107	700195681H1	SATMON014	g2668745	BLASTN	1246	1e-95	99
375	107	700444838H1	SATMON027	g2668745	BLASTN	1249	1e-95	96
376	107	700581619H1	SATMON031	g2668745	BLASTN	943	1e-94	96
377	107	700351021H1	SATMON023	g2668745	BLASTN	853	1e-91	92
378	107	700205723H1	SATMON003	g2668745	BLASTN	1138	1e-91	95
379	107	700159712H1	SATMON012	g2668745	BLASTN	1199	1e-91	94
380	107	700158937H1	SATMON012	g2668745	BLASTN	1132	1e-90	96
381	107	700336255H1	SATMON019	g2668745	BLASTN	489	1e-85	94
382	107	700422922H1	SATMONN01	g2668745	BLASTN	642	1e-84	95
383	107	700347429H1	SATMON023	g2668745	BLASTN	891	1e-83	92
384	107	700350695H1	SATMON023	g2668745	BLASTN	960	1e-83	91
385	107	700212988H1	SATMON016	g2668745	BLASTN	988	1e-82	96
386	107	700345278H1	SATMON021	g2668745	BLASTN	989	1e-82	95
387	107	700264475H1	SATMON017	g2668745	BLASTN	1089	1e-82	99
388	107	700211923H1	SATMON016	g2668745	BLASTN	991	1e-81	94
389	107	700620974H1	SATMON034	g2668745	BLASTN	907	1e-80	92
390	107	700156401H1	SATMON012	g2668745	BLASTN	1058	1e-79	90
391	107	700172547H1	SATMON013	g2668745	BLASTN	1042	1e-78	96
392	107	700552384H1	SATMON022	g2668745	BLASTN	916	1e-76	96

393	107	700219926H1	SATMON011	g2668745	BLASTN	1005	1e-75	100
394	107	700357492H1	SATMON024	g2668745	BLASTN	610	1e-74	99
395	107	700343365H1	SATMON021	g2668745	BLASTN	891	1e-74	94
396	107	700018618H1	SATMON001	g2668745	BLASTN	1001	1e-74	93
397	107	700570755H1	SATMON030	g2668745	BLASTN	845	1e-71	93
398	107	700194777H1	SATMON014	g2668745	BLASTN	940	1e-69	100
399	107	700453790H1	SATMON029	g2668745	BLASTN	925	1e-68	92
400	107	700197306H1	SATMON014	g2668745	BLASTN	928	1e-68	85
401	107	700355750H1	SATMON024	g2668745	BLASTN	393	1e-66	93
402	107	700172940H1	SATMON013	g2668745	BLASTN	902	1e-66	97
403	107	700102133H1	SATMON010	g2668745	BLASTN	850	1e-62	100
404	107	700350332H1	SATMON023	g2668745	BLASTN	539	1e-57	97
405	107	700450285H1	SATMON028	g2668745	BLASTN	750	1e-53	100
406	107	700165003H1	SATMON013	g2668745	BLASTN	548	1e-52	83
407	107	700016136H1	SATMON001	g2668745	BLASTN	527	1e-50	85
408	107	700171557H1	SATMON013	g2668745	BLASTN	714	1e-50	95
409	107	700238156H1	SATMON010	g2668745	BLASTN	715	1e-50	96
410	107	700425175H1	SATMONN01	g2668745	BLASTN	698	1e-49	94
411	107	700354402H1	SATMON024	g2668745	BLASTN	616	1e-48	91
412	107	700159204H1	SATMON012	g2668745	BLASTN	617	1e-42	94
413	107	700623602H1	SATMON034	g2668745	BLASTN	460	1e-38	100
414	107	700612844H1	SATMON033	g2668745	BLASTN	421	1e-36	84
415	107	700621062H2	SATMON034	g2668745	BLASTN	285	1e-25	89
416	107	700335685H1	SATMON019	g2668745	BLASTN	339	1e-25	91
417	13843	700334949H1	SATMON019	g2570500	BLASTN	680	1e-55	83
418	13843	700346817H1	SATMON021	g2570500	BLASTN	705	1e-54	83
419	13843	700103380H1	SATMON010	g2570500	BLASTN	710	1e-54	83
420	13843	700348280H1	SATMON023	g2570500	BLASTN	669	1e-51	83
421	13843	700453203H1	SATMON028	g2570500	BLASTN	659	1e-50	82
422	13843	700381101H1	SATMON023	g2570500	BLASTN	621	1e-47	82
423	13843	700347617H1	SATMON023	g2570500	BLASTN	592	1e-44	85
424	13843	700043259H1	SATMON004	g2570500	BLASTN	530	1e-39	84
425	13843	701184447H1	SATMONN06	g2570500	BLASTN	481	1e-35	78
426	21076	700241354H1	SATMON010	g166634	BLASTX	201	1e-20	58
427	24066	700423113H1	SATMONN01	g457744	BLASTX	124	1e-23	54
428	24266	700577157H1	SATMON031	g2570500	BLASTN	1001	1e-74	89
429	2531	700099364H1	SATMON009	g2570500	BLASTN	669	1e-51	86
430	2531	700336387H1	SATMON019	g2570500	BLASTN	389	1e-47	85
431	2531	700217095H1	SATMON016	g2570500	BLASTN	451	1e-33	86
432	2531	700155869H1	SATMON007	g2570500	BLASTN	385	1e-27	89
433	2531	700575534H1	SATMON030	g2570500	BLASTN	365	1e-26	88
434	2531	700163562H1	SATMON013	g2570501	BLASTX	145	1e-24	94
435	32364	700204306H1	SATMON003	g2668745	BLASTN	471	1e-28	74
436	32856	700166756H1	SATMON013	g534915	BLASTN	744	1e-53	76
437	32856	700042535H1	SATMON004	g534915	BLASTN	644	1e-44	73
438	3384	700237775H1	SATMON010	g2258073	BLASTN	911	1e-67	81
439	3384	700342456H1	SATMON021	g2258073	BLASTN	648	1e-64	78
440	3384	700073654H1	SATMON007	g2668745	BLASTN	860	1e-63	78
441	3384	700577805H1	SATMON031	g2258073	BLASTN	840	1e-61	78
442	3384	700028881H1	SATMON003	g534915	BLASTN	835	1e-60	78
443	3384	700215076H1	SATMON016	g534915	BLASTN	824	1e-59	78
444	3384	700017479H1	SATMON001	g534915	BLASTN	766	1e-55	80
445	3384	700204495H1	SATMON003	g534915	BLASTN	373	1e-51	81
446	3384	700206347H1	SATMON003	g2706449	BLASTN	685	1e-48	80

447	3384	700351040H1	SATMON023	g2706449	BLASTN	436	1e-45	78
448	3384	700345264H1	SATMON021	g2706449	BLASTN	616	1e-42	82
449	3384	700196795H1	SATMON014	g2570500	BLASTN	579	1e-39	80
450	3384	700019241H1	SATMON001	g2706449	BLASTN	583	1e-39	78
451	3384	700018612H1	SATMON001	g2668745	BLASTN	518	1e-34	76
452	3384	700102142H1	SATMON010	g2668745	BLASTN	539	1e-34	78
453	3384	700348430H1	SATMON023	g534915	BLASTN	489	1e-30	78
454	3384	700337745H1	SATMON020	g2706449	BLASTN	471	1e-28	79
455	3384	700439515H1	SATMON026	g534915	BLASTN	437	1e-27	75
456	3384	700074977H1	SATMON007	g534915	BLASTN	434	1e-25	76
457	3384	700615213H1	SATMON033	g2570501	BLASTX	125	1e-21	93
458	3384	700074109H1	SATMON007	g2668746	BLASTX	197	1e-20	72
459	3384	700549517H1	SATMON022	g2668746	BLASTX	172	1e-17	75
460	3384	700030347H1	SATMON003	g2668746	BLASTX	171	1e-16	77
461	3384	700221176H1	SATMON011	g2668746	BLASTX	171	1e-16	77
462	3384	700433360H1	SATMONN01	g2668746	BLASTX	95	1e-13	74
463	5000	700026151H1	SATMON003	g2903	BLASTX	261	1e-28	54
464	5000	700347165H1	SATMON021	g2624379	BLASTX	223	1e-24	51
465	5000	700430341H1	SATMONN01	g2903	BLASTX	185	1e-18	56
466	5000	700457781H1	SATMON029	g2903	BLASTX	133	1e-16	49
467	5861	700104993H1	SATMON010	g2258073	BLASTN	456	1e-27	73
468	5861	700203452H1	SATMON003	g2258073	BLASTN	428	1e-26	72
469	-L1431590	LIB143-006-Q1-E1-C9	LIB143	g16347	BLASTN	286	1e-13	61
470	-L1433414	LIB143-026-Q1-E1-C3	LIB143	g2258073	BLASTN	480	1e-29	70
471	-L1482832	LIB148-009-Q1-E1-D8	LIB148	g2258073	BLASTN	1086	1e-81	78
472	-L30674379	LIB3067-042-Q1-K1-H8	LIB3067	g2668745	BLASTN	305	1e-21	68
473	-L30675678	LIB3067-034-Q1-K1-E3	LIB3067	g2706449	BLASTN	286	1e-12	73
474	107	LIB3059-036-Q1-K1-B10	LIB3059	g2668745	BLASTN	1965	1e-166	100
475	107	LIB3061-035-Q1-K1-C9	LIB3061	g2668745	BLASTN	948	1e-138	93
476	107	LIB3061-032-Q1-K1-A12	LIB3061	g2668745	BLASTN	1685	1e-138	96
477	107	LIB3062-044-Q1-K1-F8	LIB3062	g2668745	BLASTN	1492	1e-134	95
478	107	LIB3068-025-Q1-K1-E5	LIB3068	g2668745	BLASTN	1687	1e-132	96
479	107	LIB3067-022-Q1-K1-D11	LIB3067	g2668745	BLASTN	1581	1e-128	91
480	107	LIB3067-016-Q1-K1-G4	LIB3067	g2668745	BLASTN	1305	1e-126	97
481	107	LIB3067-029-Q1-K1-C6	LIB3067	g2668745	BLASTN	1560	1e-125	90
482	107	LIB189-031-Q1-E1-D3	LIB189	g2668745	BLASTN	897	1e-81	85
483	24066	LIB3069-047-Q1-K1-C4	LIB3069	g166634	BLASTX	173	1e-45	55
484	24266	LIB3069-006-Q1-K1-F4	LIB3069	g2570500	BLASTN	717	1e-57	83

485	293	LIB3068-043-Q1-K1-A2	LIB3068	g633598	BLASTN	552	1e-34	78
486	32364	LIB3066-001-Q1-K1-B7	LIB3066	g2668745	BLASTN	612	1e-40	73
487	32856	LIB189-028-Q1-E1-C4	LIB189	g534915	BLASTN	986	1e-73	73
488	3384	LIB143-026-Q1-E1-C1	LIB143	g534915	BLASTN	1284	1e-98	78
489	3384	LIB3068-013-Q1-K1-H2	LIB3068	g534915	BLASTN	1074	1e-80	78
490	3384	LIB3062-033-Q1-K1-D2	LIB3062	g2668745	BLASTN	1009	1e-75	76
491	3384	LIB83-002-Q1-E1-D2	LIB83	g2706449	BLASTN	820	1e-59	78
492	3384	LIB3062-057-Q1-K1-B7	LIB3062	g2668745	BLASTN	801	1e-58	73
493	3384	LIB3062-001-Q1-K2-H5	LIB3062	g16347	BLASTN	802	1e-57	77
494	3384	LIB189-022-Q1-E1-D5	LIB189	g2668745	BLASTN	646	1e-43	75
495	3384	LIB189-012-Q1-E1-F4	LIB189	g2570501	BLASTX	138	1e-32	72
496	5000	LIB36-015-Q1-E1-D6	LIB36	g2624379	BLASTX	236	1e-41	51
497	5000	LIB83-016-Q1-E1-H7	LIB83	g4198	BLASTN	534	1e-33	61

MAIZE PYROPHOSPHATE-DEPENDENT FRUCTOSE-6-PHOSPHATE PHOSPHOTRANSFERASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
498	-700208959	700208959H1	SATMON016	g169538	BLASTX	107	1e-19	50
499	-700237606	700237606H1	SATMON010	g169538	BLASTX	114	1e-11	62
500	3456	700083478H1	SATMON011	g169538	BLASTX	121	1e-39	88
501	3652	700242182H1	SATMON010	g169538	BLASTX	155	1e-13	82
502	4965	700475352H1	SATMON025	g169538	BLASTX	123	1e-9	69
503	4965	700550752H1	SATMON022	g169538	BLASTX	123	1e-9	69
504	5359	700347441H1	SATMON023	g169538	BLASTX	139	1e-11	70
505	-L30594734	LIB3059-018-Q1-K1-H3	LIB3059	g169538	BLASTX	145	1e-49	83
506	-L30622375	LIB3062-009-Q1-K1-B3	LIB3062	g169538	BLASTX	157	1e-30	65
507	32156	LIB189-021-Q1-E1-G8	LIB189	g169538	BLASTX	123	1e-25	78

MAIZE INVERTASES

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
508	-700240132	700240132H1	SATMON010	g397631	BLASTX	134	1e-11	74
509	1923	700574932H1	SATMON030	g393390	BLASTX	152	1e-14	65
510	4355	700379641H1	SATMON021	g1177601	BLASTX	175	1e-19	85

MAIZE SUCROSE SYNTHASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	%Ident
511	-700151470	700151470H1	SATMON007	g1196837	BLASTX	197	1e-27	64
512	-700214035	700214035H1	SATMON016	g22485	BLASTN	523	1e-34	79
513	-700262270	700262270H1	SATMON017	g2570066	BLASTN	866	1e-63	76
514	-700334686	700334686H1	SATMON019	g1100216	BLASTN	424	1e-31	88
515	-700381593	700381593H1	SATMON023	g22485	BLASTN	219	1e-13	97
516	-700404808	700404808H1	SATMON026	g2570066	BLASTN	859	1e-70	82
517	-700456905	700456905H1	SATMON029	g22485	BLASTN	528	1e-64	90
518	-700571529	700571529H1	SATMON030	g19106	BLASTX	139	1e-24	56
519	-700576567	700576567H1	SATMON030	g22485	BLASTN	285	1e-14	92
520	-700800659	700800659H1	SATMON036	g22485	BLASTN	558	1e-37	97
521	-700802941	700802941H1	SATMON036	g22485	BLASTN	316	1e-29	97
522	-701181030	701181030H1	SATMONN06	g2606080	BLASTN	669	1e-46	72
523	13723	700203023H1	SATMON003	g2570066	BLASTN	820	1e-68	84
524	13723	700215119H1	SATMON016	g2570066	BLASTN	680	1e-47	86
525	13723	700473266H1	SATMON025	g2570066	BLASTN	537	1e-35	85
526	15661	700440404H1	SATMON026	g2570066	BLASTN	364	1e-36	74
527	15661	700168252H1	SATMON013	g16525	BLASTN	433	1e-27	80
528	20925	700551647H1	SATMON022	g2570066	BLASTN	307	1e-35	73
529	20925	700257052H1	SATMON017	g2570067	BLASTX	118	1e-9	64
530	20934	700217752H1	SATMON016	g514945	BLASTN	1397	1e-107	98
531	20934	700332156H1	SATMON019	g514945	BLASTN	589	1e-97	95
532	30444	700257522H1	SATMON017	g1100216	BLASTN	760	1e-54	95
533	32909	700264718H1	SATMON017	g2570066	BLASTN	702	1e-57	76
534	405	700091402H1	SATMON011	g514945	BLASTN	1830	1e-143	100
535	405	700572549H1	SATMON030	g514945	BLASTN	1658	1e-129	99
536	405	700203058H1	SATMON003	g22485	BLASTN	1360	1e-127	100
537	405	700091753H1	SATMON011	g514945	BLASTN	1245	1e-126	99
538	405	700090929H1	SATMON011	g514945	BLASTN	1620	1e-126	100
539	405	700091711H1	SATMON011	g514945	BLASTN	1621	1e-126	99
540	405	700084254H1	SATMON011	g514945	BLASTN	1600	1e-124	100
541	405	700082305H1	SATMON011	g514945	BLASTN	1601	1e-124	99
542	405	700048236H1	SATMON003	g22485	BLASTN	1583	1e-123	99
543	405	700086713H1	SATMON011	g514945	BLASTN	1584	1e-123	99
544	405	700049353H1	SATMON003	g514945	BLASTN	1586	1e-123	99
545	405	700082766H1	SATMON011	g22485	BLASTN	1589	1e-123	98
546	405	700086055H1	SATMON011	g514945	BLASTN	1590	1e-123	100
547	405	700215105H1	SATMON016	g514945	BLASTN	1590	1e-123	100
548	405	700104149H1	SATMON010	g22485	BLASTN	1594	1e-123	98
549	405	700101601H1	SATMON009	g514945	BLASTN	1270	1e-122	100
550	405	700206869H1	SATMON003	g22485	BLASTN	1574	1e-122	97
551	405	700088163H1	SATMON011	g22485	BLASTN	1581	1e-122	99
552	405	700089166H1	SATMON011	g514945	BLASTN	1565	1e-121	100
553	405	700266251H1	SATMON017	g514945	BLASTN	1570	1e-121	100
554	405	700332710H1	SATMON019	g514945	BLASTN	1570	1e-121	100
555	405	700571106H1	SATMON030	g514945	BLASTN	1227	1e-120	98
556	405	700081893H1	SATMON011	g514945	BLASTN	1550	1e-120	98
557	405	700074739H1	SATMON007	g514945	BLASTN	1550	1e-120	100
558	405	700095163H1	SATMON008	g514945	BLASTN	1555	1e-120	100
559	405	700612766H1	SATMON033	g514945	BLASTN	883	1e-119	96
560	405	700267271H1	SATMON017	g514945	BLASTN	1535	1e-119	100
561	405	700083175H1	SATMON011	g514945	BLASTN	1535	1e-119	100
562	405	700088993H1	SATMON011	g22485	BLASTN	1545	1e-119	98

563	405	700094087H1	SATMON008	g22485	BLASTN	1526	1e-118	99
564	405	700086708H1	SATMON011	g514945	BLASTN	1529	1e-118	97
565	405	700090671H1	SATMON011	g514945	BLASTN	1530	1e-118	100
566	405	700209809H1	SATMON016	g22485	BLASTN	1532	1e-118	99
567	405	700084625H1	SATMON011	g514945	BLASTN	1533	1e-118	99
568	405	700089718H1	SATMON011	g514945	BLASTN	1120	1e-117	100
569	405	700213014H1	SATMON016	g514945	BLASTN	1405	1e-117	100
570	405	700086555H1	SATMON011	g514945	BLASTN	1514	1e-117	98
571	405	700475892H1	SATMON025	g514945	BLASTN	1516	1e-117	99
572	405	700047374H1	SATMON003	g22485	BLASTN	1516	1e-117	99
573	405	700090018H1	SATMON011	g514945	BLASTN	1519	1e-117	99
574	405	700076107H1	SATMON007	g514945	BLASTN	1520	1e-117	93
575	405	700213105H1	SATMON016	g514945	BLASTN	972	1e-116	99
576	405	700103806H1	SATMON010	g514945	BLASTN	1503	1e-116	99
577	405	700090748H1	SATMON011	g514945	BLASTN	1505	1e-116	100
578	405	700052006H1	SATMON003	g514945	BLASTN	1506	1e-116	99
579	405	700614963H1	SATMON033	g514945	BLASTN	957	1e-115	93
580	405	700337255H1	SATMON020	g22485	BLASTN	995	1e-115	97
581	405	700102778H1	SATMON010	g22485	BLASTN	1493	1e-115	99
582	405	700405466H1	SATMON029	g22485	BLASTN	1493	1e-115	99
583	405	700209634H1	SATMON016	g514945	BLASTN	1495	1e-115	100
584	405	700220467H1	SATMON011	g514945	BLASTN	1495	1e-115	100
585	405	700266637H1	SATMON017	g514945	BLASTN	1480	1e-114	100
586	405	700267579H1	SATMON017	g514945	BLASTN	1484	1e-114	99
587	405	700088475H1	SATMON011	g514945	BLASTN	1465	1e-113	100
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597	405	700211934H1	SATMON016	g22485	BLASTN	1215	1e-112	98
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711	405	700467851H1	SATMON025	g22485	BLASTN	1245	1e-100	97
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791	405	700224219H1	SATMON011	g514945	BLASTN	1213	1e-92	99
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816	405	700806685H1	SATMON036	g22485	BLASTN	1186	1e-89	99
817	405	700803846H1	SATMON036	g22485	BLASTN	892	1e-88	95
818	405	700218514H1	SATMON011	g533251	BLASTN	907	1e-88	91
819	405	700574674H1	SATMON030	g22485	BLASTN	957	1e-88	84
820	405	700196082H1	SATMON014	g22485	BLASTN	1054	1e-88	94
821	405	700241637H1	SATMON010	g22485	BLASTN	1081	1e-88	98
822	405	700801876H1	SATMON036	g22485	BLASTN	1163	1e-88	98
823	405	700213443H1	SATMON016	g514945	BLASTN	1171	1e-88	99
824	405	700465181H1	SATMON025	g22485	BLASTN	797	1e-87	92
825	405	700798732H1	SATMON036	g22485	BLASTN	1159	1e-87	96
826	405	700153473H1	SATMON007	g514945	BLASTN	1160	1e-87	100
827	405	700165496H1	SATMON013	g514945	BLASTN	1160	1e-87	97
828	405	700264250H1	SATMON017	g514945	BLASTN	643	1e-86	100
829	405	700335490H1	SATMON019	g514945	BLASTN	671	1e-86	97
830	405	700575891H1	SATMON030	g22485	BLASTN	780	1e-86	92
831	405	700222931H1	SATMON011	g514945	BLASTN	1117	1e-86	91
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835	405	700209043H1	SATMON016	g514945	BLASTN	659	1e-85	98
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838	405	700171040H1	SATMON013	g22485	BLASTN	1127	1e-85	99
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842	405	700218263H1	SATMON016	g514945	BLASTN	1135	1e-85	100
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847	405	700216767H1	SATMON016	g514945	BLASTN	1005	1e-84	98
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853	405	700377630H1	SATMON019	g514945	BLASTN	649	1e-83	95
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856	405	700806447H1	SATMON036	g22485	BLASTN	1106	1e-83	93
857	405	700018166H1	SATMON001	g514945	BLASTN	1108	1e-83	98
858	405	700083463H1	SATMON011	g514945	BLASTN	633	1e-82	92
859	405	700548890H1	SATMON022	g22485	BLASTN	727	1e-82	93
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861	405	700016408H1	SATMON001	g514945	BLASTN	1026	1e-82	97
862	405	700569427H2	SATMON030	g514945	BLASTN	1095	1e-82	97
863	405	700172546H1	SATMON013	g514945	BLASTN	1100	1e-82	100
864	405	700804387H1	SATMON036	g22485	BLASTN	668	1e-81	97
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866	405	700807167H1	SATMON036	g22485	BLASTN	1024	1e-81	97
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873	405	700803344H1	SATMON036	g22485	BLASTN	834	1e-80	97
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882	405	700150388H1	SATMON007	g22485	BLASTN	1075	1e-80	100
883	405	700807395H1	SATMON036	g22485	BLASTN	571	1e-79	90
884	405	700090864H1	SATMON011	g514945	BLASTN	630	1e-79	100
885	405	700217812H1	SATMON016	g514945	BLASTN	646	1e-79	91
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887	405	700203302H1	SATMON003	g514945	BLASTN	1030	1e-79	100
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889	405	700805065H1	SATMON036	g22485	BLASTN	1066	1e-79	95
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892	405	700018847H1	SATMON001	g22485	BLASTN	1045	1e-78	98
893	405	700803420H1	SATMON036	g22485	BLASTN	1048	1e-78	96
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937	405	700214724H1	SATMON016	g514945	BLASTN	763	1e-54	98
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947	405	700155148H1	SATMON007	g514945	BLASTN	397	1e-45	97
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971	405	700202170H1	SATMON003	g19108	BLASTX	133	1e-11	96
972	537	700209929H1	SATMON016	g22485	BLASTN	1478	1e-114	99
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976	537	700799436H1	SATMON036	g22485	BLASTN	1361	1e-104	99
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991	537	700804848H1	SATMON036	g22485	BLASTN	306	1e-33	98
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993	8549	700075574H1	SATMON007	g1100216	BLASTN	701	1e-92	100
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1006	8549	700264112H1	SATMON017	g1100216	BLASTN	428	1e-34	91
1007	8549	700473660H1	SATMON025	g1100216	BLASTN	415	1e-28	100
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1011	-L30612133	LIB3061-024-Q1-K1-H5	LIB3061	g22485	BLASTN	849	1e-61	80
1012	-L30616296	LIB3061-043-Q1-K1-A10	LIB3061	g22485	BLASTN	479	1e-98	82
1013	-L30623037	LIB3062-030-Q1-K1-F12	LIB3062	g514945	BLASTN	684	1e-48	78
1014	-L30625289	LIB3062-021-Q1-K1-C2	LIB3062	g514945	BLASTN	1180	1e-111	79
1015	-L30663565	LIB3066-053-Q1-K1-D6	LIB3066	g530978	BLASTN	568	1e-36	76
1016	-L30784420	LIB3078-039-Q1-K1-A4	LIB3078	g514945	BLASTN	484	1e-40	81
1017	30444	LIB3069-052-Q1-K1-F8	LIB3069	g1100216	BLASTN	558	1e-77	89
1018	32909	LIB143-057-Q1-E1-F6	LIB143	g2570066	BLASTN	902	1e-69	74
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1030	405	LIB3062-022-Q1-K1-C9	LIB3062	g514945	BLASTN	2084	1e-164	99
1031	405	LIB3062-033-Q1-K1-C7	LIB3062	g514945	BLASTN	1854	1e-161	95
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1033	405	LIB3059-010-Q1-K1-C9	LIB3059	g22485	BLASTN	2018	1e-159	99
1034	405	LIB3059-013-Q1-K1-B10	LIB3059	g22485	BLASTN	2022	1e-159	98
1035	405	LIB3061-020-Q1-K1-F2	LIB3061	g22485	BLASTN	1771	1e-158	97
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1037	405	LIB3062-023-Q1-K1-D10	LIB3062	g22485	BLASTN	1508	1e-157	96
1038	405	LIB3061-008-Q1-K1-H11	LIB3061	g22485	BLASTN	1983	1e-156	97
1039	405	LIB3059-024-Q1-K1-H4	LIB3059	g22485	BLASTN	1051	1e-154	99
1040	405	LIB3062-048-Q1-K1-G5	LIB3062	g22485	BLASTN	1187	1e-154	94
1041	405	LIB3061-025-Q1-K1-B1	LIB3061	g22485	BLASTN	1803	1e-154	95
1042	405	LIB3061-028-Q1-K1-C4	LIB3061	g22485	BLASTN	1963	1e-154	97
1043	405	LIB3078-057-Q1-K1-D9	LIB3078	g514945	BLASTN	1412	1e-153	92
1044	405	LIB3061-021-Q1-K1-A8	LIB3061	g22485	BLASTN	1465	1e-153	96
1045	405	LIB3061-025-Q1-K1-B5	LIB3061	g22485	BLASTN	1524	1e-153	96
1046	405	LIB3061-008-Q1-K1-C7	LIB3061	g22485	BLASTN	1879	1e-153	94
1047	405	LIB3078-039-Q1-K1-A8	LIB3078	g514945	BLASTN	1853	1e-151	96
1048	405	LIB3061-049-Q1-K1-E5	LIB3061	g22485	BLASTN	1801	1e-150	98
1049	405	LIB3062-001-Q1-K2-G2	LIB3062	g514945	BLASTN	1916	1e-150	94
1050	405	LIB3061-021-Q1-K1-G6	LIB3061	g22485	BLASTN	1918	1e-150	92
1051	405	LIB3061-039-Q1-K1-D2	LIB3061	g22485	BLASTN	1361	1e-149	96
1052	405	LIB3061-051-Q1-K1-G8	LIB3061	g22485	BLASTN	1768	1e-148	98
1053	405	LIB3061-015-Q1-K1-A12	LIB3061	g22485	BLASTN	1667	1e-146	93
1054	405	LIB3059-040-Q1-K1-H11	LIB3059	g22485	BLASTN	1835	1e-146	97
1055	405	LIB3061-002-Q1-K2-G5	LIB3061	g22485	BLASTN	1845	1e-144	89
1056	405	LIB3062-002-	LIB3062	g22485	BLASTN	1672	1e-142	99

		Q1-K2-G12						
1057	405	LIB3059-048-Q1-K1-H5	LIB3059	g22485	BLASTN	1822	1e-142	99
1058	405	LIB3078-040-Q1-K1-F8	LIB3078	g514945	BLASTN	1801	1e-141	97
1059	405	LIB3078-001-Q1-K1-C7	LIB3078	g22485	BLASTN	1246	1e-139	95
1060	405	LIB3061-024-Q1-K1-A12	LIB3061	g22485	BLASTN	1376	1e-139	94
1061	405	LIB3061-026-Q1-K1-D3	LIB3061	g22485	BLASTN	1643	1e-138	93
1062	405	LIB3061-056-Q1-K1-D8	LIB3061	g22485	BLASTN	1763	1e-138	92
1063	405	LIB3069-041-Q1-K1-G12	LIB3069	g514945	BLASTN	1758	1e-137	97
1064	405	LIB3059-025-Q1-K1-E5	LIB3059	g22485	BLASTN	1532	1e-132	94
1065	405	LIB3061-014-Q1-K1-D4	LIB3061	g22485	BLASTN	1294	1e-130	88
1066	405	LIB3061-005-Q1-K1-C9	LIB3061	g22485	BLASTN	1540	1e-130	97
1067	405	LIB3061-016-Q1-K1-G2	LIB3061	g22485	BLASTN	1251	1e-129	85
1068	405	LIB3069-029-Q1-K1-B2	LIB3069	g514945	BLASTN	1657	1e-129	88
1069	405	LIB3078-012-Q1-K1-F7	LIB3078	g514945	BLASTN	857	1e-128	86
1070	405	LIB3078-016-Q1-K1-D7	LIB3078	g514945	BLASTN	1335	1e-128	87
1071	405	LIB3062-049-Q1-K1-A8	LIB3062	g514945	BLASTN	1609	1e-128	88
1072	405	LIB143-006-Q1-E1-G12	LIB143	g514945	BLASTN	1614	1e-125	96
1073	405	LIB3059-024-Q1-K1-E5	LIB3059	g22485	BLASTN	1529	1e-123	83
1074	405	LIB3069-008-Q1-K1-C1	LIB3069	g514945	BLASTN	1036	1e-115	94
1075	405	LIB3059-018-Q1-K1-F11	LIB3059	g514945	BLASTN	910	1e-103	93
1076	405	LIB3078-001-Q1-K1-E8	LIB3078	g514945	BLASTN	952	1e-98	90
1077	405	LIB3059-017-Q1-K1-G4	LIB3059	g22485	BLASTN	1170	1e-88	92
1078	405	LIB3067-045-Q1-K1-E9	LIB3067	g533251	BLASTN	917	1e-87	87
1079	405	LIB3062-015-Q1-K1-C1	LIB3062	g514945	BLASTN	1066	1e-86	96
1080	405	LIB3059-039-Q1-K1-A3	LIB3059	g22485	BLASTN	856	1e-82	92
1081	405	LIB3062-024-Q1-K1-C3	LIB3062	g514945	BLASTN	548	1e-79	88
1082	405	LIB3059-029-Q1-K1-F1	LIB3059	g22485	BLASTN	925	1e-74	94
1083	405	LIB3059-006-	LIB3059	g22485	BLASTN	530	1e-50	83

		Q1-K1-F4						
1084	405	LIB3067-017-Q1-K1-C3	LIB3067	g533251	BLASTN	425	1e-26	100
1085	405	LIB3061-028-Q1-K1-A9	LIB3061	g19106	BLASTX	118	1e-25	100
1086	537	LIB3066-009-Q1-K1-B9	LIB3066	g22485	BLASTN	1369	1e-122	96

MAIZE HEXOKINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1087	-700018381	700018381H1	SATMON001	g1899025	BLASTX	166	1e-16	48
1088	-700051079	700051079H1	SATMON003	g1899025	BLASTX	84	1e-11	50
1089	-700101579	700101579H1	SATMON009	g881521	BLASTX	217	1e-23	66
1090	-700105594	700105594H1	SATMON010	g3087888	BLASTX	181	1e-17	57
1091	-700106018	700106018H1	SATMON010	g3087888	BLASTX	195	1e-19	64
1092	-700157233	700157233H1	SATMON012	g3087888	BLASTX	198	1e-20	58
1093	-700202992	700202992H1	SATMON003	g3087888	BLASTX	89	1e-9	58
1094	-700224204	700224204H1	SATMON011	g1899024	BLASTN	520	1e-34	70
1095	-700241273	700241273H1	SATMON010	g3087888	BLASTX	184	1e-18	58
1096	-700352183	700352183H1	SATMON023	g1899024	BLASTN	481	1e-31	70
1097	-700573814	700573814H1	SATMON030	g1899024	BLASTN	535	1e-34	67
1098	-700612458	700612458H1	SATMON033	g619928	BLASTX	229	1e-26	61
1099	-701168774	701168774H1	SATMONN05	g619927	BLASTN	252	1e-10	62
1100	1195	700457430H1	SATMON029	g3087888	BLASTX	122	1e-19	53
1101	13262	700102942H1	SATMON010	g3087888	BLASTX	113	1e-18	53
1102	1378	700456148H1	SATMON029	g1899025	BLASTX	267	1e-29	59
1103	1378	700455837H1	SATMON029	g1899025	BLASTX	166	1e-21	60
1104	17305	700460742H1	SATMON031	g619928	BLASTX	131	1e-15	57
1105	17305	700614972H1	SATMON033	g1899025	BLASTX	100	1e-8	53
1106	1842	700089135H1	SATMON011	g619928	BLASTX	405	1e-49	70
1107	1842	700430234H1	SATMONN01	g619927	BLASTN	461	1e-28	72
1108	1842	700166122H1	SATMON013	g619928	BLASTX	183	1e-18	84
1109	24376	700053677H1	SATMON010	g1899024	BLASTN	642	1e-44	70
1110	24376	700152328H1	SATMON007	g619927	BLASTN	555	1e-37	69
1111	24376	700623451H1	SATMON034	g619928	BLASTX	197	1e-32	72
1112	28388	700089065H1	SATMON011	g619928	BLASTX	186	1e-30	61
1113	3345	700072110H1	SATMON007	g619928	BLASTX	125	1e-24	66
1114	3345	700472061H1	SATMON025	g619928	BLASTX	112	1e-20	55
1115	3345	701173753H1	SATMONN05	g619928	BLASTX	135	1e-16	54
1116	3345	700202130H1	SATMON003	g619928	BLASTX	113	1e-11	68
1117	5073	700582054H1	SATMON031	g619928	BLASTX	247	1e-29	66
1118	5073	700053432H1	SATMON009	g619928	BLASTX	233	1e-25	60
1119	6731	700099009H1	SATMON009	g619927	BLASTN	736	1e-52	72
1120	6731	700089738H1	SATMON011	g1899024	BLASTN	700	1e-49	70
1121	6731	700171542H1	SATMON013	g619927	BLASTN	530	1e-35	74
1122	7565	700356773H1	SATMON024	g1899025	BLASTX	177	1e-17	62
1123	9695	700212172H1	SATMON016	g1899024	BLASTN	832	1e-60	74
1124	9695	700212124H1	SATMON016	g1899024	BLASTN	835	1e-60	75
1125	9695	700094278H1	SATMON008	g1899024	BLASTN	819	1e-59	74
1126	-L30621307	LIB3062-001-Q1-K2-G11	LIB3062	g1899025	BLASTX	95	1e-32	53
1127	-L30782665	LIB3078-007-Q1-K1-E9	LIB3078	g3087888	BLASTX	130	1e-39	47

1128	24376	LIB3069-041-Q1-K1-E7	LIB3069	g1899024	BLASTN	608	1e-61	70
1129	28244	LIB3061-004-Q1-K1-F9	LIB3061	g687676	BLASTN	499	1e-30	65
1130	28388	LIB3066-030-Q1-K1-G10	LIB3066	g619928	BLASTX	299	1e-63	64
1131	3364	LIB3078-051-Q1-K1-B3	LIB3078	g687676	BLASTN	619	1e-41	67
1132	3364	LIB3078-053-Q1-K1-C9	LIB3078	g687676	BLASTN	627	1e-41	69
1133	3364	LIB84-015-Q1-E1-F7	LIB84	g687676	BLASTN	554	1e-35	69
1134	6731	LIB3061-028-Q1-K1-C1	LIB3061	g1899024	BLASTN	831	1e-60	70
1135	9695	LIB143-065-Q1-E1-C10	LIB143	g1899024	BLASTN	1096	1e-82	73

MAIZE FRUCTOKINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1136	-700106058	700106058H1	SATMON010	g1052972	BLASTN	220	1e-9	68
1137	-700151135	700151135H1	SATMON007	g297014	BLASTN	351	1e-18	75
1138	-700169310	700169310H1	SATMON013	g1052972	BLASTN	273	1e-12	59
1139	-700210226	700210226H1	SATMON016	g1052973	BLASTX	188	1e-24	68
1140	-700257901	700257901H1	SATMON017	g297015	BLASTX	200	1e-20	72
1141	-700621274	700621274H1	SATMON034	g1052973	BLASTX	141	1e-24	64
1142	11678	700105513H1	SATMON010	g1052972	BLASTN	580	1e-39	64
1143	11678	700170725H1	SATMON013	g1052972	BLASTN	478	1e-31	66
1144	2526	700159958H1	SATMON012	g1052973	BLASTX	152	1e-14	64
1145	2754	700102678H1	SATMON010	g1052972	BLASTN	707	1e-50	69
1146	2754	700102312H1	SATMON010	g1052972	BLASTN	701	1e-49	69
1147	2754	700205695H1	SATMON003	g1915973	BLASTN	633	1e-43	69
1148	2754	700221511H1	SATMON011	g1915973	BLASTN	587	1e-40	69
1149	2754	700469079H1	SATMON025	g1052972	BLASTN	584	1e-39	72
1150	2754	701173520H1	SATMONN05	g1915973	BLASTN	342	1e-36	70
1151	2754	700267332H1	SATMON017	g1052972	BLASTN	541	1e-35	64
1152	2754	701164907H1	SATMONN04	g1052973	BLASTX	280	1e-33	57
1153	2754	700450050H2	SATMON028	g1052973	BLASTX	160	1e-31	60
1154	2754	701182860H1	SATMONN06	g297015	BLASTX	188	1e-27	65
1155	2754	700467520H1	SATMON025	g1915974	BLASTX	242	1e-26	60
1156	2754	700159848H1	SATMON012	g1052973	BLASTX	197	1e-24	63
1157	3287	700088103H1	SATMON011	g2102693	BLASTX	239	1e-43	74
1158	3287	700210913H1	SATMON016	g2102693	BLASTX	250	1e-35	77
1159	3287	700167609H1	SATMON013	g1052973	BLASTX	300	1e-35	68
1160	3287	700085916H1	SATMON011	g1052972	BLASTN	553	1e-35	64
1161	3287	700262715H1	SATMON017	g1915974	BLASTX	201	1e-33	71
1162	3287	700170179H1	SATMON013	g1052973	BLASTX	289	1e-33	67
1163	3287	700615671H1	SATMON033	g1052972	BLASTN	515	1e-32	63
1164	3287	700223640H1	SATMON011	g1052973	BLASTX	219	1e-31	67
1165	3287	700215234H1	SATMON016	g1052973	BLASTX	190	1e-30	67
1166	3287	700203946H1	SATMON003	g1052973	BLASTX	198	1e-30	60
1167	3287	700028411H1	SATMON003	g2102693	BLASTX	110	1e-29	57
1168	3287	700224307H1	SATMON011	g1052973	BLASTX	159	1e-29	87
1169	3287	700072013H1	SATMON007	g1052973	BLASTX	191	1e-29	65

1170	3287	700215669H1	SATMON016	g1052973	BLASTX	260	1e-29	57
1171	3287	700353954H1	SATMON024	g1052973	BLASTX	260	1e-29	61
1172	3287	700342211H1	SATMON021	g1052973	BLASTX	137	1e-28	67
1173	3287	700085462H1	SATMON011	g297014	BLASTN	466	1e-28	62
1174	3287	700220972H1	SATMON011	g1052973	BLASTX	109	1e-27	83
1175	3287	700451141H1	SATMON028	g1052973	BLASTX	245	1e-27	63
1176	3287	700087484H1	SATMON011	g1052972	BLASTN	440	1e-26	64
1177	3287	700343411H1	SATMON021	g1052973	BLASTX	163	1e-25	67
1178	3287	700217263H1	SATMON016	g1915973	BLASTN	393	1e-25	68
1179	3287	700030665H1	SATMON003	g1052973	BLASTX	176	1e-24	71
1180	3287	700343380H1	SATMON021	g1052973	BLASTX	228	1e-24	57
1181	3287	701159743H2	SATMONN04	g1052973	BLASTX	183	1e-23	55
1182	3287	700221543H1	SATMON011	g1052973	BLASTX	217	1e-23	50
1183	3287	700333946H1	SATMON019	g1052973	BLASTX	178	1e-22	66
1184	3287	700091730H1	SATMON011	g1052973	BLASTX	171	1e-21	64
1185	3287	700570521H1	SATMON030	g1915974	BLASTX	98	1e-18	58
1186	3287	700048604H1	SATMON003	g1052973	BLASTX	88	1e-15	54
1187	3287	700208681H1	SATMON016	g1052973	BLASTX	129	1e-15	55
1188	3287	700028328H1	SATMON003	g1052973	BLASTX	162	1e-15	66
1189	3287	700220530H1	SATMON011	g1052973	BLASTX	141	1e-14	88
1190	3287	700243726H1	SATMON010	g1052973	BLASTX	153	1e-14	68
1191	3287	700142502H1	SATMON012	g1052973	BLASTX	157	1e-14	47
1192	3287	700336537H1	SATMON019	g1052973	BLASTX	141	1e-12	50
1193	3287	700205308H1	SATMON003	g1052973	BLASTX	133	1e-11	75
1194	5966	700084171H1	SATMON011	g1052972	BLASTN	448	1e-26	66
1195	5966	700084951H1	SATMON011	g2102693	BLASTX	214	1e-22	73
1196	5966	700089353H1	SATMON011	g2102691	BLASTX	195	1e-20	72
1197	5966	700220723H1	SATMON011	g1915974	BLASTX	198	1e-20	73
1198	5966	700084412H1	SATMON011	g2102693	BLASTX	179	1e-19	76
1199	5966	700085628H1	SATMON011	g2102691	BLASTX	180	1e-18	72
1200	5966	700027982H1	SATMON003	g2102691	BLASTX	178	1e-17	72
1201	5966	700106884H1	SATMON010	g1915974	BLASTX	148	1e-13	75
1202	5966	700053135H1	SATMON008	g1915974	BLASTX	131	1e-11	73
1203	5966	700027988H1	SATMON003	g1915974	BLASTX	134	1e-11	65
1204	5966	700207083H1	SATMON003	g1915974	BLASTX	100	1e-10	46
1205	5966	700158574H1	SATMON012	g1915974	BLASTX	120	1e-9	50
1206	2754	LIB3061-030-Q1-K1-G12	LIB3061	g1052972	BLASTN	882	1e-64	67
1207	2754	LIB3061-030-Q1-K1-G11	LIB3061	g1052972	BLASTN	751	1e-52	68
1208	3287	LIB3067-040-Q1-K1-H10	LIB3067	g1052972	BLASTN	657	1e-44	64
1209	3287	LIB84-024-Q1-E1-H7	LIB84	g1052972	BLASTN	638	1e-42	64
1210	3287	LIB3069-045-Q1-K1-F6	LIB3069	g1052972	BLASTN	592	1e-38	61
1211	3287	LIB3061-014-Q1-K1-A3	LIB3061	g1052973	BLASTX	175	1e-36	41
1212	3287	LIB3062-019-Q1-K1-H11	LIB3062	g1052973	BLASTX	154	1e-30	68
1213	3287	LIB3067-054-Q1-K1-C9	LIB3067	g1052972	BLASTN	495	1e-30	61
1214	3287	LIB3067-022-Q1-K1-H4	LIB3067	g1052973	BLASTX	141	1e-27	68

1215	3287	LIB3069-045-Q1-K1-F2	LIB3069	g1052972	BLASTN	439	1e-25	57

MAIZE NDP-KINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1216	-700575072	700575072H1	SATMON030	g303849	BLASTX	74	1e-13	89
1217	-701170773	701170773H1	SATMONN05	g1777930	BLASTX	132	1e-30	71
1218	2462	700050003H1	SATMON003	g218233	BLASTN	656	1e-58	83
1219	2462	700204789H1	SATMON003	g218233	BLASTN	780	1e-58	87
1220	2462	700049819H1	SATMON003	g218233	BLASTN	786	1e-58	86
1221	2462	700204211H1	SATMON003	g218233	BLASTN	786	1e-58	86
1222	2462	700205742H1	SATMON003	g218233	BLASTN	763	1e-57	86
1223	2462	700207611H1	SATMON016	g218233	BLASTN	764	1e-57	87
1224	2462	700072505H1	SATMON007	g218233	BLASTN	740	1e-55	86
1225	2462	700236468H1	SATMON010	g218233	BLASTN	710	1e-52	86
1226	2462	701181270H1	SATMONN06	g218233	BLASTN	445	1e-51	86
1227	2462	700573201H1	SATMON030	g218233	BLASTN	691	1e-51	81
1228	2462	700452623H1	SATMON028	g218233	BLASTN	694	1e-51	85
1229	2462	700351523H1	SATMON023	g218233	BLASTN	679	1e-50	86
1230	2462	700042795H1	SATMON004	g218233	BLASTN	630	1e-45	86
1231	2462	700445979H1	SATMON027	g218233	BLASTN	595	1e-43	86
1232	2462	700201855H1	SATMON003	g218233	BLASTN	604	1e-43	87
1233	2462	700573101H1	SATMON030	g218233	BLASTN	594	1e-42	78
1234	2462	700049543H1	SATMON003	g218233	BLASTN	577	1e-41	79
1235	2462	700432359H1	SATMONN01	g218233	BLASTN	561	1e-40	81
1236	2462	701182021H1	SATMONN06	g218233	BLASTN	561	1e-40	85
1237	2462	701182019H1	SATMONN06	g218233	BLASTN	566	1e-40	86
1238	2462	700150928H1	SATMON007	g218233	BLASTN	569	1e-40	85
1239	2462	700202824H1	SATMON003	g218233	BLASTN	336	1e-39	86
1240	2462	700451056H1	SATMON028	g218233	BLASTN	553	1e-39	85
1241	2462	700449958H1	SATMON028	g218233	BLASTN	544	1e-38	86
1242	2462	700347592H1	SATMON023	g218233	BLASTN	403	1e-34	78
1243	2462	700573195H1	SATMON030	g218233	BLASTN	200	1e-22	84
1244	2462	700582836H1	SATMON031	g303849	BLASTX	157	1e-15	83
1245	2462	700029459H1	SATMON003	g303849	BLASTX	134	1e-11	84
1246	27065	700583429H1	SATMON031	g1064895	BLASTX	72	1e-13	54
1247	-L1482546	LIB148-007-Q1-E1-E6	LIB148	g218233	BLASTN	359	1e-19	75
1248	2462	LIB3067-039-Q1-K1-B10	LIB3067	g218233	BLASTN	711	1e-52	82
1249	2462	LIB3078-001-Q1-K1-F3	LIB3078	g218233	BLASTN	488	1e-49	85
1250	2462	LIB3067-029-Q1-K1-C3	LIB3067	g1236951	BLASTX	166	1e-31	96
1251	25174	LIB189-022-Q1-E1-E9	LIB189	g758643	BLASTN	440	1e-25	76

MAIZE GLUCOSE-6-PHOSPHATE 1-DEHYDROGENASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1252	-700047645	700047645H1	SATMON003	g471345	BLASTX	193	1e-21	58
1253	-700210379	700210379H1	SATMON016	g1480344	BLASTX	103	1e-10	85
1254	9135	700203121H1	SATMON003	g1166405	BLASTX	108	1e-10	78

MAIZE PHOSPHOGLUCOMUTASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1255	-700045655	700045655H1	SATMON004	g534982	BLASTX	144	1e-12	65
1256	-700053330	700053330H1	SATMON009	g3294467	BLASTX	211	1e-23	71
1257	-700102193	700102193H1	SATMON010	g534982	BLASTX	145	1e-14	53
1258	-700166982	700166982H1	SATMON013	g2795876	BLASTX	168	1e-16	52
1259	-700169540	700169540H1	SATMON013	g534982	BLASTX	180	1e-17	61
1260	-700210088	700210088H1	SATMON016	g534982	BLASTX	328	1e-38	55
1261	-700573194	700573194H1	SATMON030	g534982	BLASTX	192	1e-21	54
1262	-700616588	700616588H1	SATMON033	g3294468	BLASTN	593	1e-48	95
1263	119	700574655H1	SATMON030	g3294466	BLASTN	1705	1e-133	98
1264	119	700574672H1	SATMON030	g3294466	BLASTN	820	1e-121	100
1265	119	700100992H1	SATMON009	g3294466	BLASTN	1545	1e-119	99
1266	119	700615409H1	SATMON033	g3294466	BLASTN	1050	1e-118	100
1267	119	700210693H1	SATMON016	g3294468	BLASTN	1515	1e-117	100
1268	119	700381526H1	SATMON023	g3294468	BLASTN	1490	1e-115	100
1269	119	700026372H1	SATMON003	g3294466	BLASTN	1463	1e-113	99
1270	119	700201578H1	SATMON003	g3294468	BLASTN	677	1e-112	96
1271	119	700101083H1	SATMON009	g3294468	BLASTN	1430	1e-110	100
1272	119	700217101H1	SATMON016	g3294468	BLASTN	1420	1e-109	100
1273	119	700222466H1	SATMON011	g3294466	BLASTN	957	1e-106	97
1274	119	700072492H1	SATMON007	g3294466	BLASTN	1381	1e-106	99
1275	119	700043724H1	SATMON004	g3294468	BLASTN	1390	1e-106	100
1276	119	700346762H1	SATMON021	g3294468	BLASTN	1333	1e-102	94
1277	119	700347741H1	SATMON023	g3294468	BLASTN	1339	1e-102	97
1278	119	700550792H1	SATMON022	g3294466	BLASTN	731	1e-101	99
1279	119	700380144H1	SATMON021	g3294466	BLASTN	1216	1e-98	97
1280	119	700241526H1	SATMON010	g3294466	BLASTN	1285	1e-98	100
1281	119	700380456H1	SATMON021	g3294468	BLASTN	650	1e-97	99
1282	119	700238734H1	SATMON010	g3294466	BLASTN	974	1e-97	97
1283	119	700083634H1	SATMON011	g3294468	BLASTN	1265	1e-96	100
1284	119	700383086H1	SATMON024	g3294466	BLASTN	961	1e-94	96
1285	119	700169630H1	SATMON013	g3294466	BLASTN	1245	1e-94	100
1286	119	701177766H1	SATMONN05	g3294466	BLASTN	1187	1e-93	97
1287	119	700142461H1	SATMON012	g3294466	BLASTN	1231	1e-93	99
1288	119	700044235H1	SATMON004	g3294466	BLASTN	1175	1e-89	100
1289	119	700216921H1	SATMON016	g3294466	BLASTN	1165	1e-88	100
1290	119	700333779H1	SATMON019	g3294466	BLASTN	996	1e-87	96
1291	119	700021881H1	SATMON001	g3294468	BLASTN	1120	1e-84	100
1292	119	700049194H1	SATMON003	g3294468	BLASTN	940	1e-82	98
1293	119	700164477H1	SATMON013	g3294466	BLASTN	1091	1e-82	99
1294	119	700169514H1	SATMON013	g3294468	BLASTN	865	1e-80	100
1295	119	700050896H1	SATMON003	g3294466	BLASTN	591	1e-76	94
1296	119	700172394H1	SATMON013	g3294466	BLASTN	1024	1e-76	99
1297	119	700211437H1	SATMON016	g3294466	BLASTN	994	1e-73	99
1298	119	700084535H1	SATMON011	g3294468	BLASTN	973	1e-72	99
1299	119	700203439H1	SATMON003	g3294466	BLASTN	765	1e-71	100
1300	119	700257833H1	SATMON017	g3294468	BLASTN	611	1e-69	94
1301	119	700621831H1	SATMON034	g3294466	BLASTN	412	1e-52	90
1302	119	700354511H1	SATMON024	g3294468	BLASTN	703	1e-52	91
1303	119	700203525H1	SATMON003	g3294468	BLASTN	708	1e-50	99

1304	119	700020476H1	SATMON001	g3294468	BLASTN	658	1e-45	99
1305	119	700050562H1	SATMON003	g3294466	BLASTN	544	1e-42	88
1306	119	700613868H1	SATMON033	g3294466	BLASTN	615	1e-42	100
1307	119	700574982H1	SATMON030	g3294466	BLASTN	473	1e-35	97
1308	119	700049512H1	SATMON003	g3294466	BLASTN	268	1e-29	95
1309	119	700260372H2	SATMON017	g3294466	BLASTN	226	1e-10	89
1310	16726	700082801H1	SATMON011	g2829893	BLASTX	278	1e-30	55
1311	16726	700212054H1	SATMON016	g2829893	BLASTX	220	1e-23	53
1312	19462	700097450H1	SATMON009	g1814400	BLASTN	323	1e-29	64
1313	19462	700441165H1	SATMON026	g1408296	BLASTX	239	1e-25	61
1314	24348	700379424H1	SATMON020	g3294466	BLASTN	707	1e-50	98
1315	2587	700089556H1	SATMON011	g2829893	BLASTX	117	1e-8	67
1316	3016	700204345H1	SATMON003	g3294468	BLASTN	1784	1e-139	98
1317	3016	700098713H1	SATMON009	g3294468	BLASTN	1516	1e-117	99
1318	3016	700084751H1	SATMON011	g3294466	BLASTN	1475	1e-114	100
1319	3016	700351326H1	SATMON023	g3294468	BLASTN	1460	1e-112	100
1320	3016	700097161H1	SATMON009	g3294466	BLASTN	1308	1e-109	98
1321	3016	700266423H1	SATMON017	g3294468	BLASTN	1065	1e-108	96
1322	3016	700349605H1	SATMON023	g3294466	BLASTN	1335	1e-107	100
1323	3016	700350209H1	SATMON023	g3294468	BLASTN	1188	1e-106	97
1324	3016	700265291H1	SATMON017	g3294468	BLASTN	873	1e-100	98
1325	3016	700457572H1	SATMON029	g3294466	BLASTN	1288	1e-98	98
1326	3016	700334810H1	SATMON019	g3294468	BLASTN	863	1e-97	99
1327	3016	700194444H1	SATMON014	g3294466	BLASTN	1265	1e-96	100
1328	3016	700457426H1	SATMON029	g3294466	BLASTN	1236	1e-94	98
1329	3016	700210958H1	SATMON016	g3294466	BLASTN	1148	1e-92	98
1330	3016	700075135H1	SATMON007	g3294468	BLASTN	1219	1e-92	97
1331	3016	700152065H1	SATMON007	g3294466	BLASTN	1135	1e-90	99
1332	3016	700219672H1	SATMON011	g3294468	BLASTN	823	1e-89	99
1333	3016	700170425H1	SATMON013	g3294466	BLASTN	1110	1e-83	100
1334	3016	700153495H1	SATMON007	g3294468	BLASTN	640	1e-82	100
1335	3016	700348567H1	SATMON023	g3294468	BLASTN	557	1e-81	87
1336	3016	700803158H1	SATMON036	g3294468	BLASTN	630	1e-60	85
1337	3016	700264923H1	SATMON017	g3294468	BLASTN	340	1e-50	98
1338	3016	700615715H1	SATMON033	g3294466	BLASTN	567	1e-48	96
1339	3016	700027830H1	SATMON003	g3294468	BLASTN	632	1e-43	95
1340	3016	700350539H1	SATMON023	g3294466	BLASTN	333	1e-41	96
1341	4562	700044891H1	SATMON004	g3294466	BLASTN	650	1e-45	74
1342	4562	700215538H1	SATMON016	g3294466	BLASTN	555	1e-37	67
1343	9894	700220429H1	SATMON011	g3294468	BLASTN	1302	1e-99	99
1344	9894	700236461H1	SATMON010	g3294466	BLASTN	1054	1e-90	97
1345	-L30594453	LIB3059-042-Q1-K1-B5	LIB3059	g1814401	BLASTX	290	1e-49	58
1346	-L30605287	LIB3060-049-Q1-K1-B7	LIB3060	g534982	BLASTX	172	1e-34	77
1347	119	LIB3059-019-Q1-K1-H1	LIB3059	g1881692	BLASTN	2094	1e-165	98
1348	119	LIB3059-031-Q1-K1-H10	LIB3059	g1881692	BLASTN	1926	1e-151	96
1349	119	LIB3069-012-Q1-K1-F2	LIB3069	g1881692	BLASTN	1188	1e-146	90
1350	119	LIB36-019-Q1-E1-A7	LIB36	g1881692	BLASTN	1783	1e-139	90
1351	119	LIB3078-023-	LIB3078	g1881692	BLASTN	860	1e-124	87

		Q1-K1-C3						
1352	119	LIB3067-058-Q1-K1-G1	LIB3067	g1881692	BLASTN	991	1e-114	99
1353	119	LIB3062-048-Q1-K1-B7	LIB3062	g1881692	BLASTN	1181	1e-103	97
1354	119	LIB3069-023-Q1-K1-G4	LIB3069	g1881692	BLASTN	1176	1e-87	84
1355	119	LIB3069-025-Q1-K1-B6	LIB3069	g1881692	BLASTN	611	1e-65	91
1356	24348	LIB3066-043-Q1-K1-F11	LIB3066	g1881692	BLASTN	560	1e-37	100
1357	24348	LIB3067-048-Q1-K1-F3	LIB3067	g1881692	BLASTN	543	1e-36	99
1358	3016	LIB143-002-Q1-E1-C12	LIB143	g2829893	BLASTX	224	1e-51	72
1359	3016	LIB189-034-Q1-E1-A11	LIB189	g2829893	BLASTX	216	1e-48	68
1360	3016	LIB3069-043-Q1-K1-D5	LIB3069	g1814401	BLASTX	98	1e-32	64

MAIZE UDP-GLUCOSE PYROPHOSPHORYLASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1361	-700197315	700197315H1	SATMON014	g1388021	BLASTX	122	1e-9	70
1362	-700203530	700203530H1	SATMON003	g1212995	BLASTN	568	1e-38	78
1363	-700267284	700267284H1	SATMON017	g1212996	BLASTX	150	1e-13	87
1364	-700336683	700336683H1	SATMON019	g1752677	BLASTX	150	1e-27	82
1365	-700342324	700342324H1	SATMON021	g3107931	BLASTX	95	1e-14	80
1366	-700354856	700354856H1	SATMON024	g1388021	BLASTX	121	1e-22	75
1367	-700613858	700613858H1	SATMON033	g1212995	BLASTN	776	1e-59	88
1368	14982	700028996H1	SATMON003	g1212995	BLASTN	560	1e-37	76
1369	14982	700155115H1	SATMON007	g1212995	BLASTN	399	1e-31	81
1370	14982	700356747H1	SATMON024	g1388021	BLASTX	166	1e-15	76
1371	19537	700573761H1	SATMON030	g1212995	BLASTN	954	1e-70	79
1372	19537	700208049H1	SATMON016	g1212995	BLASTN	901	1e-66	78
1373	19537	700086382H1	SATMON011	g1212995	BLASTN	885	1e-64	77
1374	69	700091881H1	SATMON011	g1212995	BLASTN	844	1e-105	89
1375	69	700624406H1	SATMON034	g1212995	BLASTN	816	1e-97	88
1376	69	700211464H1	SATMON016	g1212995	BLASTN	1251	1e-95	88
1377	69	700099836H1	SATMON009	g1212995	BLASTN	1239	1e-94	88
1378	69	700084756H1	SATMON011	g1212995	BLASTN	1240	1e-94	90
1379	69	700076136H1	SATMON007	g1212995	BLASTN	1243	1e-94	89
1380	69	700073071H1	SATMON007	g1212995	BLASTN	1163	1e-88	86
1381	69	700614228H1	SATMON033	g1212995	BLASTN	1013	1e-87	84
1382	69	700379926H1	SATMON021	g1212995	BLASTN	1138	1e-86	88
1383	69	700089172H1	SATMON011	g1212995	BLASTN	1141	1e-86	88
1384	69	700265063H1	SATMON017	g1212995	BLASTN	1147	1e-86	86
1385	69	700085964H1	SATMON011	g1212995	BLASTN	1135	1e-85	85
1386	69	700282281H2	SATMON023	g1212995	BLASTN	1136	1e-85	86
1387	69	700429855H1	SATMONN01	g1212995	BLASTN	1114	1e-84	89
1388	69	700347453H1	SATMON023	g1212995	BLASTN	1117	1e-84	87
1389	69	700265087H1	SATMON017	g1212995	BLASTN	1120	1e-84	87
1390	69	700092705H1	SATMON008	g1212995	BLASTN	1122	1e-84	87
1391	69	700212686H1	SATMON016	g1212995	BLASTN	1123	1e-84	91

1392	69	700623332H1	SATMON034	g1212995	BLASTN	800	1e-83	86
1393	69	700041787H1	SATMON004	g1212995	BLASTN	1091	1e-82	91
1394	69	700219031H1	SATMON011	g1212995	BLASTN	1093	1e-82	89
1395	69	700218632H1	SATMON011	g1212995	BLASTN	1086	1e-81	90
1396	69	700211962H1	SATMON016	g1212995	BLASTN	1086	1e-81	86
1397	69	700220729H1	SATMON011	g1212995	BLASTN	916	1e-80	84
1398	69	700197025H1	SATMON014	g1212995	BLASTN	1063	1e-79	89
1399	69	700086546H1	SATMON011	g1212995	BLASTN	1049	1e-78	86
1400	69	700217064H1	SATMON016	g1212995	BLASTN	1051	1e-78	88
1401	69	700799128H1	SATMON036	g1212995	BLASTN	618	1e-77	88
1402	69	700265488H1	SATMON017	g1212995	BLASTN	1030	1e-77	84
1403	69	700043842H1	SATMON004	g1212995	BLASTN	1035	1e-77	87
1404	69	700236833H1	SATMON010	g1212995	BLASTN	1035	1e-77	87
1405	69	700219083H1	SATMON011	g1212995	BLASTN	1036	1e-77	88
1406	69	700042338H1	SATMON004	g1212995	BLASTN	1037	1e-77	87
1407	69	700352484H1	SATMON023	g1212995	BLASTN	1038	1e-77	85
1408	69	700083771H1	SATMON011	g1212995	BLASTN	613	1e-76	91
1409	69	700473855H1	SATMON025	g1212995	BLASTN	755	1e-76	85
1410	69	700353922H1	SATMON024	g1212995	BLASTN	1024	1e-76	85
1411	69	700023267H1	SATMON003	g1212995	BLASTN	1007	1e-75	89
1412	69	700157596H1	SATMON012	g1212995	BLASTN	1008	1e-75	87
1413	69	700218718H1	SATMON011	g1212995	BLASTN	1012	1e-75	86
1414	69	700162316H1	SATMON012	g1212995	BLASTN	626	1e-74	80
1415	69	700046475H1	SATMON004	g1212995	BLASTN	1003	1e-74	85
1416	69	700466010H1	SATMON025	g1212995	BLASTN	558	1e-73	82
1417	69	700571392H1	SATMON030	g1212995	BLASTN	985	1e-73	85
1418	69	700165241H1	SATMON013	g1212995	BLASTN	987	1e-73	85
1419	69	700457410H1	SATMON029	g1212995	BLASTN	988	1e-73	87
1420	69	700194672H1	SATMON014	g1212995	BLASTN	963	1e-71	86
1421	69	700089746H1	SATMON011	g1212995	BLASTN	964	1e-71	83
1422	69	700801620H1	SATMON036	g1212995	BLASTN	536	1e-70	91
1423	69	700264785H1	SATMON017	g1212995	BLASTN	952	1e-70	84
1424	69	700244093H1	SATMON010	g1212995	BLASTN	954	1e-70	85
1425	69	700043787H1	SATMON004	g1212995	BLASTN	957	1e-70	85
1426	69	700267269H1	SATMON017	g1212995	BLASTN	867	1e-69	85
1427	69	700167985H1	SATMON013	g1212995	BLASTN	940	1e-69	89
1428	69	700799042H1	SATMON036	g1212995	BLASTN	812	1e-68	89
1429	69	700163824H1	SATMON013	g1212995	BLASTN	888	1e-65	86
1430	69	700098307H1	SATMON009	g1212995	BLASTN	461	1e-63	81
1431	69	700805267H1	SATMON036	g1212995	BLASTN	734	1e-63	88
1432	69	700204843H1	SATMON003	g1212995	BLASTN	854	1e-62	88
1433	69	700206721H1	SATMON003	g1212995	BLASTN	461	1e-61	81
1434	69	700018559H1	SATMON001	g1212995	BLASTN	847	1e-61	85
1435	69	700026241H1	SATMON003	g1212995	BLASTN	847	1e-61	87
1436	69	700099987H1	SATMON009	g1212995	BLASTN	461	1e-60	81
1437	69	700475628H1	SATMON025	g1212995	BLASTN	750	1e-59	80
1438	69	700016675H1	SATMON001	g1212995	BLASTN	814	1e-59	86
1439	69	700150144H1	SATMON007	g1212995	BLASTN	822	1e-59	86
1440	69	700267260H1	SATMON017	g1212995	BLASTN	461	1e-58	80
1441	69	700261336H1	SATMON017	g1212995	BLASTN	564	1e-58	82
1442	69	700618652H1	SATMON033	g1212995	BLASTN	730	1e-58	78
1443	69	700469914H1	SATMON025	g1212995	BLASTN	735	1e-58	89
1444	69	700048027H1	SATMON003	g1212995	BLASTN	807	1e-58	83
1445	69	700165703H1	SATMON013	g1212995	BLASTN	796	1e-57	85

1446	69	700265403H1	SATMON017	g1212995	BLASTN	797	1e-57	78
1447	69	700099428H1	SATMON009	g1212995	BLASTN	474	1e-56	88
1448	69	700243212H1	SATMON010	g1212995	BLASTN	779	1e-56	84
1449	69	700092996H1	SATMON008	g1212995	BLASTN	789	1e-56	84
1450	69	700803035H1	SATMON036	g1212995	BLASTN	436	1e-54	80
1451	69	700235803H1	SATMON010	g1212995	BLASTN	688	1e-54	79
1452	69	700172581H1	SATMON013	g1212995	BLASTN	754	1e-54	79
1453	69	700214715H1	SATMON016	g1212995	BLASTN	762	1e-54	86
1454	69	700223082H1	SATMON011	g1212995	BLASTN	764	1e-54	84
1455	69	700093483H1	SATMON008	g1212995	BLASTN	357	1e-51	88
1456	69	700261920H1	SATMON017	g1212995	BLASTN	363	1e-51	82
1457	69	700221718H1	SATMON011	g1212995	BLASTN	363	1e-51	83
1458	69	700453106H1	SATMON028	g1212995	BLASTN	670	1e-51	82
1459	69	700210506H1	SATMON016	g1212995	BLASTN	461	1e-50	85
1460	69	700212333H1	SATMON016	g1212995	BLASTN	443	1e-49	83
1461	69	700072654H1	SATMON007	g1212995	BLASTN	443	1e-49	79
1462	69	700218282H1	SATMON016	g1212995	BLASTN	452	1e-49	85
1463	69	700263725H1	SATMON017	g1212995	BLASTN	662	1e-49	80
1464	69	700343083H1	SATMON021	g1212995	BLASTN	388	1e-48	80
1465	69	700219739H1	SATMON011	g1212995	BLASTN	443	1e-48	81
1466	69	700620336H1	SATMON034	g1212995	BLASTN	621	1e-48	88
1467	69	700264630H1	SATMON017	g1212995	BLASTN	377	1e-47	80
1468	69	700439242H1	SATMON026	g1212995	BLASTN	648	1e-47	83
1469	69	700259658H1	SATMON017	g1212995	BLASTN	511	1e-45	79
1470	69	700263521H1	SATMON017	g1212995	BLASTN	461	1e-44	79
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1472	69	700439277H1	SATMON026	g1212995	BLASTN	461	1e-43	84
1473	69	700452839H1	SATMON028	g1212995	BLASTN	544	1e-43	77
1474	69	700220236H1	SATMON011	g1212995	BLASTN	448	1e-40	84
1475	69	700472602H1	SATMON025	g1212995	BLASTN	254	1e-38	81
1476	69	700266424H1	SATMON017	g1212995	BLASTN	499	1e-37	80
1477	69	700449187H1	SATMON028	g1212995	BLASTN	540	1e-36	81
1478	69	700202731H1	SATMON003	g1212995	BLASTN	543	1e-36	79
1479	69	700156144H2	SATMON007	g1212995	BLASTN	441	1e-35	76
1480	69	700442679H1	SATMON026	g1212995	BLASTN	533	1e-35	80
1481	69	700449879H2	SATMON028	g1212995	BLASTN	535	1e-35	81
1482	69	700266832H1	SATMON017	g1212995	BLASTN	346	1e-34	77
1483	69	700332389H1	SATMON019	g1212995	BLASTN	382	1e-34	84
1484	69	700804202H1	SATMON036	g1212995	BLASTN	436	1e-34	76
1485	69	700151037H1	SATMON007	g1212995	BLASTN	443	1e-34	79
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1487	69	700455879H1	SATMON029	g1212995	BLASTN	448	1e-32	72
1488	69	700427769H1	SATMONN01	g1212995	BLASTN	481	1e-31	81
1489	69	700464626H1	SATMON025	g1212995	BLASTN	388	1e-30	76
1490	69	700439228H1	SATMON026	g1212995	BLASTN	470	1e-30	77
1491	69	700256847H1	SATMON017	g1212995	BLASTN	264	1e-29	85
1492	69	700204881H1	SATMON003	g1212995	BLASTN	430	1e-29	81
1493	69	700076032H1	SATMON007	g1212995	BLASTN	218	1e-26	72
1494	69	700426342H1	SATMONN01	g1212995	BLASTN	443	1e-26	79
1495	69	700209062H1	SATMON016	g1212995	BLASTN	279	1e-24	80
1496	69	700076988H1	SATMON007	g1212995	BLASTN	337	1e-24	83
1497	69	700349778H1	SATMON023	g1212995	BLASTN	406	1e-24	81
1498	69	700261886H1	SATMON017	g1212995	BLASTN	287	1e-15	80
1499	69	700426642H1	SATMONN01	g1388021	BLASTX	161	1e-14	76

1500	69	700155195H1	SATMON007	g1212995	BLASTN	155	1e-10	81
1501	69	700211992H1	SATMON016	g1212996	BLASTX	118	1e-9	85
1502	-L1485255	LIB148-053-Q1-E1-E12	LIB148	g1212995	BLASTN	691	1e-48	80
1503	-L30663959	LIB3066-015-Q1-K1-F12	LIB3066	g218000	BLASTN	251	1e-9	65
1504	19537	LIB3066-025-Q1-K1-E5	LIB3066	g1212995	BLASTN	1001	1e-74	79
1505	69	LIB3059-023-Q1-K1-C8	LIB3059	g1212995	BLASTN	1301	1e-133	89
1506	69	LIB3078-022-Q1-K1-C1	LIB3078	g1212995	BLASTN	1656	1e-129	86
1507	69	LIB3059-037-Q1-K1-H5	LIB3059	g1212995	BLASTN	1646	1e-128	86
1508	69	LIB3061-030-Q1-K1-A12	LIB3061	g1212995	BLASTN	1493	1e-124	86
1509	69	LIB3061-023-Q1-K1-A1	LIB3061	g1212995	BLASTN	1598	1e-124	86
1510	69	LIB3079-001-Q1-K1-D12	LIB3079	g1212995	BLASTN	1600	1e-124	83
1511	69	LIB189-028-Q1-E1-E3	LIB189	g1212995	BLASTN	1583	1e-123	87
1512	69	LIB3067-017-Q1-K1-D9	LIB3067	g1212995	BLASTN	1364	1e-120	88
1513	69	LIB3068-007-Q1-K1-F9	LIB3068	g1212995	BLASTN	1501	1e-116	85
1514	69	LIB3069-025-Q1-K1-E9	LIB3069	g1212995	BLASTN	1487	1e-115	85
1515	69	LIB3069-026-Q1-K1-E11	LIB3069	g1212995	BLASTN	1453	1e-112	85
1516	69	LIB3066-006-Q1-K1-G12	LIB3066	g1212995	BLASTN	1077	1e-107	83
1517	69	LIB3067-027-Q1-K1-D12	LIB3067	g1212995	BLASTN	1401	1e-107	86
1518	69	LIB189-010-Q1-E1-H10	LIB189	g1212995	BLASTN	1368	1e-105	85
1519	69	LIB3066-015-Q1-K1-G12	LIB3066	g1212995	BLASTN	1289	1e-104	82
1520	69	LIB3061-016-Q1-K1-G11	LIB3061	g1212995	BLASTN	1180	1e-102	84
1521	69	LIB3059-032-Q1-K1-G11	LIB3059	g1212995	BLASTN	1334	1e-102	87
1522	69	LIB3067-059-Q1-K1-G12	LIB3067	g1212995	BLASTN	1090	1e-100	85
1523	69	LIB3061-049-Q1-K1-C8	LIB3061	g1212995	BLASTN	1223	1e-98	79
1524	69	LIB3062-044-Q1-K1-F2	LIB3062	g1212995	BLASTN	1259	1e-96	83
1525	69	LIB3061-010-Q1-K1-F5	LIB3061	g1212995	BLASTN	1180	1e-95	84
1526	69	LIB3067-018-Q1-K1-A12	LIB3067	g1212995	BLASTN	1127	1e-89	82
1527	69	LIB3067-030-Q1-K1-F4	LIB3067	g1212995	BLASTN	1171	1e-88	83

1528	69	LIB3062-021-Q1-K1-F10	LIB3062	g1212995	BLASTN	1138	1e-86	87
1529	69	LIB3061-034-Q1-K1-D8	LIB3061	g1212995	BLASTN	1148	1e-86	85
1530	69	LIB3066-049-Q1-K1-C1	LIB3066	g1212995	BLASTN	1134	1e-85	83
1531	69	LIB3078-002-Q1-K1-F5	LIB3078	g1212995	BLASTN	859	1e-77	86
1532	69	LIB84-011-Q1-E1-G9	LIB84	g1212995	BLASTN	1020	1e-76	83
1533	69	LIB3067-043-Q1-K1-D2	LIB3067	g1212995	BLASTN	574	1e-59	77
1534	69	LIB189-003-Q1-E1-G5	LIB189	g1212995	BLASTN	247	1e-40	77
1535	69	LIB3062-008-Q1-K1-E6	LIB3062	g1212995	BLASTN	576	1e-37	63
1536	69	LIB189-016-Q1-E1-H7	LIB189	g1212996	BLASTX	156	1e-30	78
1537	69	LIB3067-007-Q1-K1-G4	LIB3067	g1212996	BLASTX	145	1e-28	82

SOYBEAN TRIOSE PHOSPHATE ISOMERASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1538	-700743237	700743237H1	SOYMON012	g407525	BLASTX	173	1e-17	91
1539	-700977730	700977730H1	SOYMON009	g602589	BLASTN	373	1e-20	71
1540	-701056176	701056176H1	SOYMON032	g806311	BLASTN	752	1e-53	74
1541	-701110172	701110172H1	SOYMON036	g806311	BLASTN	801	1e-57	78
1542	10244	700995141H1	SOYMON011	g806311	BLASTN	470	1e-30	87
1543	10244	701124548H1	SOYMON037	g806311	BLASTN	490	1e-30	88
1544	10244	700739771H1	SOYMON012	g806311	BLASTN	329	1e-16	77
1545	10244	700999820H1	SOYMON018	g806312	BLASTX	147 1e-13	84	
1546	10244	701119858H1	SOYMON037	g806312	BLASTX	118	1e-9	72
1547	10535	700988684H1	SOYMON009	g806311	BLASTN	905	1e-66	79
1548	10535	700902425H1	SOYMON027	g806311	BLASTN	872	1e-63	80
1549	1357	701069004H1	SOYMON034	g806311	BLASTN	832	1e-60	81
1550	1357	701151554H1	SOYMON031	g806311	BLASTN	568	1e-38	82
1551	1357	700659936H1	SOYMON004	g806311	BLASTN	545	1e-36	79
1552	16	700680927H1	SOYMON008	g256119	BLASTN	1020	1e-81	78
1553	16	700656871H1	SOYMON004	g256119	BLASTN	903	1e-66	81
1554	16	701124364H1	SOYMON037	g256119	BLASTN	872	1e-64	80
1555	16	701134707H2	SOYMON038	g256119	BLASTN	874	1e-64	81
1556	16	700673750H1	SOYMON007	g256119	BLASTN	781	1e-60	81
1557	16	701123269H1	SOYMON037	g602589	BLASTN	819	1e-59	78
1558	16	701004846H1	SOYMON019	g256119	BLASTN	801	1e-58	80
1559	16	700993362H1	SOYMON011	g256119	BLASTN	808	1e-58	80
1560	16	701005445H1	SOYMON019	g256119	BLASTN	630	1e-56	78
1561	16	701134327H1	SOYMON038	g602589	BLASTN	782	1e-56	79
1562	16	701148169H1	SOYMON031	g602589	BLASTN	574	1e-51	76
1563	16	701153410H1	SOYMON031	g602589	BLASTN	451	1e-50	80
1564	16	700830168H1	SOYMON019	g256119	BLASTN	705	1e-50	77
1565	16	701120627H1	SOYMON037	g602589	BLASTN	715	1e-50	78

1566	16	700975358H1	SOYMON009	g602589	BLASTN	628	1e-49	77
1567	16	700755979H1	SOYMON014	g602589	BLASTN	697	1e-49	79
1568	16	701131374H1	SOYMON038	g602589	BLASTN	703	1e-49	79
1569	16	700994166H1	SOYMON011	g602589	BLASTN	513	1e-47	77
1570	16	701138038H1	SOYMON038	g602589	BLASTN	672	1e-47	77
1571	16	700974248H1	SOYMON005	g602589	BLASTN	658	1e-46	77
1572	16	700655832H1	SOYMON004	g602589	BLASTN	664	1e-46	78
1573	16	700758320H1	SOYMON015	g602589	BLASTN	409	1e-45	80
1574	16	701064709H1	SOYMON034	g602589	BLASTN	477	1e-45	78
1575	16	701138504H1	SOYMON038	g602589	BLASTN	591	1e-45	76
1576	16	700980284H1	SOYMON009	g602589	BLASTN	652	1e-45	79
1577	16	701133585H2	SOYMON038	g602589	BLASTN	634	1e-44	78
1578	16	700674706H1	SOYMON007	g602589	BLASTN	634	1e-44	78
1579	16	700964927H1	SOYMON022	g602589	BLASTN	639	1e-44	78
1580	16	700830923H1	SOYMON019	g602589	BLASTN	626	1e-43	76
1581	16	700662845H1	SOYMON005	g602589	BLASTN	617	1e-42	76
1582	16	701133824H1	SOYMON038	g602589	BLASTN	619	1e-42	78
1583	16	700848913H1	SOYMON021	g602589	BLASTN	603	1e-41	77
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1585	16	701140769H1	SOYMON038	g602589	BLASTN	605	1e-41	76
1586	16	700753357H1	SOYMON014	g602589	BLASTN	328	1e-40	78
1587	16	701056336H1	SOYMON032	g602589	BLASTN	344	1e-40	77
1588	16	700895411H1	SOYMON027	g602589	BLASTN	593	1e-40	78
1589	16	701060188H1	SOYMON033	g602589	BLASTN	277	1e-39	80
1590	16	700739461H1	SOYMON012	g602589	BLASTN	573	1e-39	77
1591	16	700941104H1	SOYMON024	g602589	BLASTN	579	1e-39	79
1592	16	700732960H1	SOYMON010	g602589	BLASTN	581	1e-39	78
1593	16	700686476H1	SOYMON008	g602589	BLASTN	583	1e-39	79
1594	16	701054231H1	SOYMON032	g602589	BLASTN	583	1e-39	77
1595	16	700671690H1	SOYMON006	g602589	BLASTN	566	1e-38	77
1596	16	700941174H1	SOYMON024	g602589	BLASTN	569	1e-38	78
1597	16	701125091H1	SOYMON037	g256119	BLASTN	358	1e-37	74
1598	16	700989827H1	SOYMON011	g602589	BLASTN	555	1e-37	78
1599	16	700835006H1	SOYMON019	g602589	BLASTN	555	1e-37	75
1600	16	700834847H1	SOYMON019	g602589	BLASTN	559	1e-37	78
1601	16	700953411H1	SOYMON022	g602589	BLASTN	314	1e-36	80
1602	16	700869222H1	SOYMON016	g602589	BLASTN	541	1e-36	78
1603	16	700850633H1	SOYMON023	g602589	BLASTN	544	1e-36	78
1604	16	700890283H1	SOYMON024	g602589	BLASTN	310	1e-35	80
1605	16	700727079H1	SOYMON009	g414549	BLASTN	358	1e-35	73
1606	16	700892544H1	SOYMON024	g602589	BLASTN	486	1e-35	78
1607	16	700869230H1	SOYMON016	g602589	BLASTN	528	1e-35	78
1608	16	700993034H1	SOYMON011	g602589	BLASTN	518	1e-34	75
1609	16	700975553H1	SOYMON009	g414549	BLASTN	524	1e-34	79
1610	16	700651326H1	SOYMON003	g602589	BLASTN	356	1e-33	80
1611	16	701215308H1	SOYMON035	g414549	BLASTN	450	1e-33	75
1612	16	700654480H1	SOYMON004	g414549	BLASTN	511	1e-33	80
1613	16	701045128H1	SOYMON032	g414549	BLASTN	512	1e-33	78
1614	16	701060759H1	SOYMON033	g414549	BLASTN	513	1e-33	80
1615	16	700741652H1	SOYMON012	g602589	BLASTN	493	1e-32	79
1616	16	700675469H1	SOYMON007	g602589	BLASTN	494	1e-32	78
1617	16	700657787H1	SOYMON004	g414549	BLASTN	495	1e-32	79
1618	16	701009957H2	SOYMON019	g414549	BLASTN	495	1e-32	80
1619	16	700983693H1	SOYMON009	g414549	BLASTN	495	1e-32	80

1620	16	701156784H1	SOYMON031	g602589	BLASTN	495	1e-32	78
1621	16	700893935H1	SOYMON024	g602589	BLASTN	481	1e-31	79
1622	16	701144619H1	SOYMON031	g414549	BLASTN	485	1e-31	78
1623	16	701148851H1	SOYMON031	g602589	BLASTN	487	1e-31	79
1624	16	701058218H1	SOYMON033	g602589	BLASTN	495	1e-31	78
1625	16	700975165H1	SOYMON009	g414549	BLASTN	466	1e-30	80
1626	16	701100165H1	SOYMON028	g602589	BLASTN	485	1e-30	79
1627	16	701150241H1	SOYMON031	g602589	BLASTN	455	1e-29	79
1628	16	701098308H1	SOYMON028	g414549	BLASTN	460	1e-29	79
1629	16	701150440H1	SOYMON031	g602589	BLASTN	462	1e-29	78
1630	16	700685125H1	SOYMON008	g414549	BLASTN	471	1e-29	81
1631	16	701061565H1	SOYMON033	g414549	BLASTN	471	1e-29	81
1632	16	700991418H1	SOYMON011	g602589	BLASTN	394	1e-28	68
1633	16	701156156H1	SOYMON031	g602589	BLASTN	456	1e-28	78
1634	16	701007231H2	SOYMON019	g602589	BLASTN	461	1e-28	79
1635	16	700829667H1	SOYMON019	g414549	BLASTN	333	1e-27	73
1636	16	701156033H1	SOYMON031	g602589	BLASTN	432	1e-27	78
1637	16	701014293H1	SOYMON019	g414549	BLASTN	446	1e-27	77
1638	16	701152138H1	SOYMON031	g414549	BLASTN	450	1e-27	81
1639	16	700945665H1	SOYMON024	g414549	BLASTN	450	1e-27	81
1640	16	701001407H1	SOYMON018	g169820	BLASTN	219	1e-26	72
1641	16	700983185H1	SOYMON009	g414549	BLASTN	435	1e-26	72
1642	16	700752364H1	SOYMON014	g414549	BLASTN	441	1e-26	76
1643	16	700992409H1	SOYMON011	g414549	BLASTN	427	1e-25	75
1644	16	701109396H1	SOYMON036	g414549	BLASTN	420	1e-24	76
1645	16	701151402H1	SOYMON031	g556171	BLASTX	151	1e-23	85
1646	16	701149617H1	SOYMON031	g556171	BLASTX	158	1e-23	86
1647	16	700747310H1	SOYMON013	g414549	BLASTN	406	1e-23	73
1648	16	701139569H1	SOYMON038	g556171	BLASTX	191	1e-22	84
1649	16	701213275H1	SOYMON035	g602589	BLASTN	255	1e-22	80
1650	16	701157185H1	SOYMON031	g556171	BLASTX	197	1e-20	90
1651	16	700655520H1	SOYMON004	g556171	BLASTX	166	1e-19	86
1652	16	701010779H1	SOYMON019	g556171	BLASTX	173	1e-19	64
1653	16	701044104H1	SOYMON032	g556171	BLASTX	188	1e-19	89
1654	16	700867605H1	SOYMON016	g556171	BLASTX	160	1e-17	70
1655	16	701058593H1	SOYMON033	g168647	BLASTX	169	1e-16	94
1656	16	701070286H1	SOYMON034	g168647	BLASTX	164	1e-15	91
1657	16	700877219H1	SOYMON018	g168647	BLASTX	154	1e-14	93
1658	16	700876790H1	SOYMON018	g168647	BLASTX	154	1e-14	93
1659	16	700877212H1	SOYMON018	g168647	BLASTX	154	1e-14	93
1660	16	700760847H1	SOYMON015	g556171	BLASTX	138	1e-13	86
1661	16	700893711H1	SOYMON024	g168647	BLASTX	140	1e-13	82
1662	16	700557532H1	SOYMON001	g256120	BLASTX	115	1e-12	88
1663	16	700793802H1	SOYMON017	g556171	BLASTX	138	1e-12	93
1664	16	700659725H1	SOYMON004	g556171	BLASTX	144	1e-12	47
1665	16	701044545H1	SOYMON032	g556171	BLASTX	144	1e-12	92
1666	16	701037485H1	SOYMON029	g556171	BLASTX	135	1e-11	96
1667	16	700683524H1	SOYMON008	g168647	BLASTX	136	1e-11	90
1668	16	700876711H1	SOYMON018	g168647	BLASTX	109	1e-10	85
1669	16	701155437H1	SOYMON031	g556171	BLASTX	130	1e-10	92
1670	28599	700997892H1	SOYMON018	g806311	BLASTN	834	1e-60	78
1671	31	701053174H1	SOYMON032	g806311	BLASTN	572	1e-37	73
1672	31	700754467H1	SOYMON014	g806312	BLASTX	145	1e-21	66
1673	31	701107430H1	SOYMON036	g806312	BLASTX	199	1e-20	63

1674	31	700985855H1	SOYMON009	g806312	BLASTX	145	1e-18	64
1675	31	701038167H1	SOYMON029	g806312	BLASTX	179	1e-17	61
1676	31	700670393H1	SOYMON006	g806312	BLASTX	167	1e-16	78
1677	31	700559280H1	SOYMON001	g609262	BLASTX	164	1e-15	69
1678	31	700793048H1	SOYMON017	g806312	BLASTX	97	1e-12	60
1679	31	700993683H1	SOYMON011	g806312	BLASTX	103	1e-11	60
1680	31	700663233H1	SOYMON005	g806312	BLASTX	130	1e-11	56
1681	31	700908079H1	SOYMON022	g806312	BLASTX	103	1e-10	60
1682	31	701043447H1	SOYMON029	g609262	BLASTX	126	1e-10	84
1683	31	700740188H1	SOYMON012	g806312	BLASTX	103	1e-8	60
1684	7466	700742922H1	SOYMON012	g806311	BLASTN	435	1e-27	76
1685	7466	700606255H1	SOYMON008	g806312	BLASTX	117	1e-17	80
1686	16	LIB3053-005-Q1-N1-F9	LIB3053	g602589	BLASTN	1000	1e-74	77
1687	16	LIB3039-035-Q1-E1-C5	LIB3039	g602589	BLASTN	979	1e-72	78
1688	16	LIB3039-031-Q1-E1-A8	LIB3039	g256119	BLASTN	911	1e-71	80
1689	16	LIB3030-003-Q1-B1-C9	LIB3030	g602589	BLASTN	949	1e-70	78
1690	16	LIB3039-023-Q1-E1-H12	LIB3039	g602589	BLASTN	913	1e-67	78
1691	16	LIB3039-047-Q1-E1-D8	LIB3039	g602589	BLASTN	566	1e-65	75
1692	16	LIB3039-052-Q1-E1-D6	LIB3039	g602589	BLASTN	890	1e-65	77
1693	16	LIB3039-051-Q1-E1-A1	LIB3039	g602589	BLASTN	855	1e-62	78
1694	16	LIB3049-009-Q1-E1-G5	LIB3049	g602589	BLASTN	783	1e-56	78
1695	16	LIB3039-009-Q1-E1-C1	LIB3039	g602589	BLASTN	805	1e-56	78
1696	16	LIB3055-006-Q1-N1-H3	LIB3055	g256119	BLASTN	481	1e-54	78
1697	16	LIB3055-013-Q1-N1-C3	LIB3055	g256119	BLASTN	769	1e-54	79
1698	16	LIB3049-034-Q1-E1-A2	LIB3049	g602589	BLASTN	626	1e-51	76
1699	16	LIB3049-022-Q1-E1-F9	LIB3049	g602589	BLASTN	519	1e-43	78
1700	16	LIB3049-030-Q1-E1-C7	LIB3049	g602589	BLASTN	572	1e-38	77
1701	16	LIB3040-035-Q1-E1-C5	LIB3040	g556171	BLASTX	175	1e-33	82
1702	16	LIB3040-005-Q1-E1-H8	LIB3040	g169820	BLASTN	324	1e-33	76
1703	16	LIB3028-025-Q1-B1-D1	LIB3028	g602589	BLASTN	464	1e-33	78
1704	16	LIB3039-022-Q1-E1-D5	LIB3039	g602589	BLASTN	357	1e-32	73
1705	16	LIB3052-001-Q1-B1-C5	LIB3052	G414549	BLASTN	327	1e-29	73
1706	28599	LIB3039-047-Q1-E1-D9	LIB3039	G806311	BLASTN	1183	1e-94	81

1707	28599	LIB3039-048-Q1-E1-D12	LIB3039	G806311	BLASTN	1007	1e-92	81

SOYBEAN FRUCTOSE 1,6-BISPHOSPHATE ALDOLASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
1708	-700565253	700565253H1	SOYMON002	G3021337	BLASTN	352	1e-39	76
1709	-700865276	700865276H1	SOYMON016	G3021337	BLASTN	629	1e-43	76
1710	-700873022	700873022H1	SOYMON018	G3696	BLASTX	211	1e-26	70
1711	-700943855	700943855H1	SOYMON024	G20204	BLASTX	202	1e-20	86
1712	-700974965	700974965H1	SOYMON005	g3021337	BLASTN	259	1e-10	84
1713	-701039850	701039850H1	SOYMON029	g22632	BLASTN	408	1e-23	76
1714	-701206840	701206840H1	SOYMON035	g3021338	BLASTX	151	1e-13	83
1715	11792	700654881H1	SOYMON004	g20204	BLASTX	150	1e-13	76
1716	11792	700746016H1	SOYMON013	g3021337	BLASTN	284	1e-12	67
1717	12314	701037190H1	SOYMON029	g3021337	BLASTN	634	1e-44	78
1718	12314	701042664H1	SOYMON029	g3021338	BLASTX	197	1e-20	66
1719	16	700651596H1	SOYMON003	g3021337	BLASTN	1101	1e-83	86
1720	16	700750439H1	SOYMON013	g3021337	BLASTN	1078	1e-81	86
1721	16	700649475H1	SOYMON003	g3021337	BLASTN	1082	1e-81	84
1722	16	700652995H1	SOYMON003	g3021337	BLASTN	1084	1e-81	82
1723	16	700981967H1	SOYMON009	g3021337	BLASTN	1071	1e-80	85
1724	16	700863243H1	SOYMON023	g3021337	BLASTN	1044	1e-78	86
1725	16	700558625H1	SOYMON001	g3021337	BLASTN	1041	1e-77	84
1726	16	700564806H1	SOYMON002	g3021337	BLASTN	1021	1e-76	80
1727	16	700746368H1	SOYMON013	g3021337	BLASTN	897	1e-75	86
1728	16	700960290H1	SOYMON022	g3021337	BLASTN	1009	1e-75	87
1729	16	701055132H1	SOYMON032	g3021337	BLASTN	1011	1e-75	86
1730	16	701056109H1	SOYMON032	g3021337	BLASTN	1012	1e-75	84
1731	16	701119884H1	SOYMON037	g3021337	BLASTN	1014	1e-75	87
1732	16	700898149H1	SOYMON027	g3021337	BLASTN	1015	1e-75	86
1733	16	700661436H1	SOYMON005	g3021337	BLASTN	596	1e-74	83
1734	16	701042223H1	SOYMON029	g3021337	BLASTN	997	1e-74	84
1735	16	700676004H1	SOYMON007	g3021337	BLASTN	984	1e-73	85
1736	16	700747718H1	SOYMON013	g3021337	BLASTN	988	1e-73	87
1737	16	700751133H1	SOYMON014	g3021337	BLASTN	989	1e-73	86
1738	16	701215247H1	SOYMON035	g3021337	BLASTN	989	1e-73	84
1739	16	700652484H1	SOYMON003	g3021337	BLASTN	910	1e-72	85
1740	16	700869785H1	SOYMON016	g3021337	BLASTN	970	1e-72	87
1741	16	700981960H1	SOYMON009	g3021337	BLASTN	970	1e-72	87
1742	16	700969335H1	SOYMON005	g3021337	BLASTN	972	1e-72	82
1743	16	700854174H1	SOYMON023	g3021337	BLASTN	965	1e-71	84
1744	16	700761638H1	SOYMON015	g3021337	BLASTN	966	1e-71	86
1745	16	700984860H1	SOYMON009	g3021337	BLASTN	967	1e-71	84
1746	16	701005716H1	SOYMON019	g3021337	BLASTN	967	1e-71	83
1747	16	700941053H1	SOYMON024	g3021337	BLASTN	968	1e-71	86
1748	16	700561358H1	SOYMON002	g3021337	BLASTN	968	1e-71	82
1749	16	700564906H1	SOYMON002	g3021337	BLASTN	562	1e-70	82
1750	16	700833951H1	SOYMON019	g3021337	BLASTN	954	1e-70	88
1751	16	701117626H1	SOYMON037	g3021337	BLASTN	957	1e-70	85
1752	16	700729103H1	SOYMON009	g3021337	BLASTN	535	1e-69	86
1753	16	700670615H1	SOYMON006	g3021337	BLASTN	936	1e-69	83
1754	16	701053635H1	SOYMON032	g3021337	BLASTN	941	1e-69	84

1755	16	700982280H1	SOYMON009	g3021337	BLASTN	923	1e-68	82
1756	16	701119874H1	SOYMON037	g3021337	BLASTN	925	1e-68	88
1757	16	700758937H1	SOYMON015	g3021337	BLASTN	926	1e-68	87
1758	16	701214027H1	SOYMON035	g3021337	BLASTN	928	1e-68	82
1759	16	700972858H1	SOYMON005	g3021337	BLASTN	929	1e-68	84
1760	16	701099780H1	SOYMON028	g3021337	BLASTN	930	1e-68	85
1761	16	700829560H1	SOYMON019	g3021337	BLASTN	932	1e-68	85
1762	16	700971973H1	SOYMON005	g3021337	BLASTN	576	1e-67	85
1763	16	701142336H1	SOYMON038	g3021337	BLASTN	750	1e-67	81
1764	16	701132605H1	SOYMON038	g3021337	BLASTN	759	1e-67	85
1765	16	700969222H1	SOYMON005	g3021337	BLASTN	913	1e-67	84
1766	16	700670956H1	SOYMON006	g3021337	BLASTN	920	1e-67	84
1767	16	700895725H1	SOYMON027	g3021337	BLASTN	921	1e-67	84
1768	16	701013771H1	SOYMON019	g3021337	BLASTN	921	1e-67	81
1769	16	701055481H1	SOYMON032	g3021337	BLASTN	654	1e-66	80
1770	16	700753940H1	SOYMON014	g3021337	BLASTN	899	1e-66	84
1771	16	700974141H1	SOYMON005	g3021337	BLASTN	900	1e-66	81
1772	16	700562408H1	SOYMON002	g3021337	BLASTN	902	1e-66	82
1773	16	700685292H1	SOYMON008	g3021337	BLASTN	903	1e-66	83
1774	16	700985157H1	SOYMON009	g3021337	BLASTN	907	1e-66	82
1775	16	701038194H1	SOYMON029	g3021337	BLASTN	907	1e-66	82
1776	16	700986633H1	SOYMON009	g3021337	BLASTN	908	1e-66	83
1777	16	700564282H1	SOYMON002	g3021337	BLASTN	517	1e-65	83
1778	16	700733754H1	SOYMON010	g3021337	BLASTN	680	1e-65	84
1779	16	700988179H1	SOYMON009	g3021337	BLASTN	887	1e-65	82
1780	16	700555591H1	SOYMON001	g3021337	BLASTN	887	1e-65	82
1781	16	701206717H1	SOYMON035	g3021337	BLASTN	888	1e-65	81
1782	16	700968494H1	SOYMON036	g3021337	BLASTN	889	1e-65	86
1783	16	700906271H1	SOYMON022	g3021337	BLASTN	894	1e-65	82
1784	16	700677674H1	SOYMON007	g3021337	BLASTN	894	1e-65	83
1785	16	700970391H1	SOYMON005	g3021337	BLASTN	896	1e-65	83
1786	16	700753641H1	SOYMON014	g3021337	BLASTN	897	1e-65	82
1787	16	700646593H1	SOYMON014	g3021337	BLASTN	468	1e-64	80
1788	16	700565615H1	SOYMON002	g3021337	BLASTN	667	1e-64	80
1789	16	700746523H1	SOYMON013	g3021337	BLASTN	744	1e-64	83
1790	16	700899019H1	SOYMON027	g3021337	BLASTN	875	1e-64	83
1791	16	701127167H1	SOYMON037	g3021337	BLASTN	876	1e-64	84
1792	16	701131053H1	SOYMON038	g3021337	BLASTN	879	1e-64	84
1793	16	700670980H1	SOYMON006	g3021337	BLASTN	881	1e-64	83
1794	16	701055811H1	SOYMON032	g3021337	BLASTN	881	1e-64	85
1795	16	700900103H1	SOYMON027	g3021337	BLASTN	882	1e-64	83
1796	16	700975609H1	SOYMON009	g3021337	BLASTN	882	1e-64	84
1797	16	701102865H1	SOYMON028	g3021337	BLASTN	883	1e-64	85
1798	16	701145255H1	SOYMON031	g3021337	BLASTN	509	1e-63	80
1799	16	701210875H1	SOYMON035	g3021337	BLASTN	616	1e-63	84
1800	16	700646664H1	SOYMON014	g3021337	BLASTN	862	1e-63	85
1801	16	700897337H1	SOYMON027	g3021337	BLASTN	865	1e-63	86
1802	16	700736783H1	SOYMON010	g3021337	BLASTN	867	1e-63	83
1803	16	701059586H1	SOYMON033	g3021337	BLASTN	869	1e-63	81
1804	16	701127063H1	SOYMON037	g3021337	BLASTN	412	1e-62	84
1805	16	700556614H1	SOYMON001	g3021337	BLASTN	475	1e-62	86
1806	16	700672681H1	SOYMON006	g3021337	BLASTN	818	1e-62	82
1807	16	700727057H1	SOYMON009	g3021337	BLASTN	850	1e-62	82
1808	16	701042141H1	SOYMON029	g3021337	BLASTN	851	1e-62	83

1809	16	700561860H1	SOYMON002	g3021337	BLASTN	854	1e-62	81
1810	16	700677460H1	SOYMON007	g3021337	BLASTN	855	1e-62	83
1811	16	700971671H1	SOYMON005	g3021337	BLASTN	856	1e-62	81
1812	16	700749578H1	SOYMON013	g3021337	BLASTN	856	1e-62	81
1813	16	700672288H1	SOYMON006	g3021337	BLASTN	860	1e-62	81
1814	16	701068481H1	SOYMON034	g3021337	BLASTN	861	1e-62	81
1815	16	700729913H1	SOYMON009	g3021337	BLASTN	661	1e-61	79
1816	16	700739449H1	SOYMON012	g3021337	BLASTN	724	1e-61	85
1817	16	700830902H1	SOYMON019	g3021337	BLASTN	814	1e-61	83
1818	16	700895304H1	SOYMON027	g3021337	BLASTN	840	1e-61	82
1819	16	700605676H2	SOYMON005	g3021337	BLASTN	842	1e-61	84
1820	16	700677453H1	SOYMON007	g3021337	BLASTN	843	1e-61	83
1821	16	700983108H1	SOYMON009	g3021337	BLASTN	843	1e-61	81
1822	16	700889170H1	SOYMON024	g3021337	BLASTN	845	1e-61	86
1823	16	701004956H1	SOYMON019	g3021337	BLASTN	849	1e-61	82
1824	16	700958213H1	SOYMON022	g3021337	BLASTN	849	1e-61	82
1825	16	701129305H1	SOYMON037	g3021337	BLASTN	659	1e-60	85
1826	16	701014446H1	SOYMON019	g3021337	BLASTN	669	1e-60	85
1827	16	700832047H1	SOYMON019	g3021337	BLASTN	738	1e-60	83
1828	16	700669966H1	SOYMON006	g3021337	BLASTN	829	1e-60	82
1829	16	700758028H1	SOYMON015	g3021337	BLASTN	829	1e-60	81
1830	16	700659491H1	SOYMON004	g3021337	BLASTN	829	1e-60	83
1831	16	701003560H1	SOYMON019	g3021337	BLASTN	829	1e-60	82
1832	16	701060964H1	SOYMON033	g3021337	BLASTN	833	1e-60	81
1833	16	700548284H1	SOYMON002	g3021337	BLASTN	834	1e-60	82
1834	16	700894957H1	SOYMON024	g3021337	BLASTN	837	1e-60	81
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1837	16	700754430H1	SOYMON014	g3021337	BLASTN	654	1e-59	85
1838	16	700865919H1	SOYMON016	g3021337	BLASTN	814	1e-59	81
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1840	16	701048203H1	SOYMON032	g3021337	BLASTN	816	1e-59	81
1841	16	700846414H1	SOYMON021	g3021337	BLASTN	819	1e-59	81
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1844	16	700834462H1	SOYMON019	g3021337	BLASTN	823	1e-59	81
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1846	16	700562478H1	SOYMON002	g3021337	BLASTN	487	1e-58	84
1847	16	700788114H1	SOYMON011	g3021337	BLASTN	751	1e-58	83
1848	16	700753792H1	SOYMON014	g3021337	BLASTN	804	1e-58	84
1849	16	700837427H1	SOYMON020	g3021337	BLASTN	805	1e-58	86
1850	16	700753668H1	SOYMON014	g3021337	BLASTN	806	1e-58	85
1851	16	700667315H1	SOYMON006	g3021337	BLASTN	809	1e-58	81
1852	16	700808315H1	SOYMON024	g3021337	BLASTN	558	1e-57	80
1853	16	700670207H1	SOYMON006	g3021337	BLASTN	791	1e-57	87
1854	16	700849886H1	SOYMON021	g3021337	BLASTN	791	1e-57	83
1855	16	700839033H1	SOYMON020	g3021337	BLASTN	791	1e-57	81
1856	16	700751117H1	SOYMON014	g3021337	BLASTN	799	1e-57	86
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1858	16	700669164H1	SOYMON006	g3021337	BLASTN	800	1e-57	80
1859	16	700548285H1	SOYMON002	g3021337	BLASTN	801	1e-57	85
1860	16	701065620H1	SOYMON034	g3021337	BLASTN	426	1e-56	82
1861	16	700727996H1	SOYMON009	g3021337	BLASTN	468	1e-56	79
1862	16	700869176H1	SOYMON016	g3021337	BLASTN	786	1e-56	85

1863	16	700973141H1	SOYMON005	g3021337	BLASTN	440	1e-55	79
1864	16	700969555H1	SOYMON005	g3021337	BLASTN	448	1e-55	81
1865	16	700866138H1	SOYMON016	g3021337	BLASTN	641	1e-55	86
1866	16	700904813H1	SOYMON022	g3021337	BLASTN	699	1e-55	85
1867	16	700894146H1	SOYMON024	g3021337	BLASTN	773	1e-55	86
1868	16	700669945H1	SOYMON006	g3021337	BLASTN	773	1e-55	86
1869	16	701060489H1	SOYMON033	g3021337	BLASTN	664	1e-54	85
1870	16	701125675H1	SOYMON037	g3021337	BLASTN	721	1e-54	85
1871	16	700754750H1	SOYMON014	g3021337	BLASTN	722	1e-54	86
1872	16	701142770H1	SOYMON038	g3021337	BLASTN	755	1e-54	88
1873	16	700731095H1	SOYMON009	g3021337	BLASTN	755	1e-54	87
1874	16	700667966H1	SOYMON006	g3021337	BLASTN	756	1e-54	84
1875	16	700673606H1	SOYMON007	g3021337	BLASTN	760	1e-54	83
1876	16	700605289H2	SOYMON003	g3021337	BLASTN	763	1e-54	84
1877	16	700965253H1	SOYMON022	g3021337	BLASTN	763	1e-54	86
1878	16	700732985H1	SOYMON010	g3021337	BLASTN	765	1e-54	87
1879	16	700986523H1	SOYMON009	g3021337	BLASTN	474	1e-53	85
1880	16	701100040H2	SOYMON028	g3021337	BLASTN	602	1e-53	85
1881	16	700895328H1	SOYMON027	g3021337	BLASTN	742	1e-53	83
1882	16	701141083H1	SOYMON038	g3021337	BLASTN	751	1e-53	85
1883	16	700829878H1	SOYMON019	g3021337	BLASTN	417	1e-52	86
1884	16	700671825H1	SOYMON006	g3021337	BLASTN	431	1e-52	79
1885	16	700755240H1	SOYMON014	g3021337	BLASTN	731	1e-52	88
1886	16	701011659H1	SOYMON019	g3021337	BLASTN	734	1e-52	86
1887	16	701011547H1	SOYMON019	g3021337	BLASTN	381	1e-51	84
1888	16	700835614H1	SOYMON019	g3021337	BLASTN	437	1e-51	80
1889	16	700671849H1	SOYMON006	g3021337	BLASTN	471	1e-51	87
1890	16	700734822H1	SOYMON010	g3021337	BLASTN	486	1e-51	79
1891	16	700830223H1	SOYMON019	g3021337	BLASTN	622	1e-51	84
1892	16	700659970H1	SOYMON004	g3021337	BLASTN	722	1e-51	82
1893	16	701101779H1	SOYMON028	g3021337	BLASTN	728	1e-51	86
1894	16	700852553H1	SOYMON023	g3021337	BLASTN	490	1e-50	88
1895	16	700853857H1	SOYMON023	g3021337	BLASTN	711	1e-50	88
1896	16	700980358H1	SOYMON009	g3021337	BLASTN	712	1e-50	85
1897	16	700672182H1	SOYMON006	g3021337	BLASTN	714	1e-50	89
1898	16	700748455H1	SOYMON013	g3021337	BLASTN	396	1e-49	85
1899	16	700657257H1	SOYMON004	g3021337	BLASTN	694	1e-49	75
1900	16	700729301H1	SOYMON009	g3021337	BLASTN	702	1e-49	80
1901	16	700726175H1	SOYMON009	g3021337	BLASTN	704	1e-49	80
1902	16	700966844H1	SOYMON028	g3021337	BLASTN	414	1e-47	81
1903	16	700960965H1	SOYMON022	g3021337	BLASTN	452	1e-47	85
1904	16	700678326H1	SOYMON007	g3021337	BLASTN	480	1e-47	83
1905	16	700751042H1	SOYMON014	g3021337	BLASTN	675	1e-47	87
1906	16	700830863H1	SOYMON019	g3021337	BLASTN	343	1e-46	84
1907	16	701213640H1	SOYMON035	g3021337	BLASTN	667	1e-46	87
1908	16	700870215H1	SOYMON016	g3021337	BLASTN	667	1e-46	80
1909	16	700658278H1	SOYMON004	g3021337	BLASTN	425	1e-44	87
1910	16	700942532H1	SOYMON024	g3021337	BLASTN	583	1e-44	83
1911	16	700986276H1	SOYMON009	g3021337	BLASTN	630	1e-43	81
1912	16	700870216H1	SOYMON016	g3021337	BLASTN	457	1e-42	82
1913	16	700899828H1	SOYMON027	g3021337	BLASTN	464	1e-42	83
1914	16	700678816H1	SOYMON007	g3021337	BLASTN	618	1e-42	86
1915	16	700666809H1	SOYMON005	g3021337	BLASTN	621	1e-42	82
1916	16	701098073H1	SOYMON028	g3021337	BLASTN	285	1e-41	83

1917	16	700669492H1	SOYMON006	g3021337	BLASTN	504	1e-39	83
1918	16	700975340H1	SOYMON009	g3021337	BLASTN	574	1e-39	81
1919	16	700753528H1	SOYMON014	g3021337	BLASTN	576	1e-39	81
1920	16	700665923H1	SOYMON005	g3021337	BLASTN	373	1e-35	84
1921	16	701038320H1	SOYMON029	g3021337	BLASTN	518	1e-34	84
1922	16	700755605H1	SOYMON014	g3021337	BLASTN	431	1e-33	81
1923	16	700890349H1	SOYMON024	g3021337	BLASTN	511	1e-33	88
1924	16	700669817H1	SOYMON006	g3021337	BLASTN	363	1e-31	87
1925	16	701097640H1	SOYMON028	g3021337	BLASTN	476	1e-30	67
1926	16	700562959H1	SOYMON002	g3021337	BLASTN	482	1e-30	81
1927	16	700852454H1	SOYMON023	g3021337	BLASTN	446	1e-28	77
1928	16	701121443H1	SOYMON037	g3021337	BLASTN	418	1e-24	84
1929	16	701118247H1	SOYMON037	g3021337	BLASTN	280	1e-18	85
1930	16	700665401H1	SOYMON005	g927505	BLASTX	172	1e-16	94
1931	16	700750038H1	SOYMON013	g3021338	BLASTX	162	1e-15	84
1932	16	700665414H1	SOYMON005	g3021337	BLASTN	273	1e-13	88
1933	16	700889072H1	SOYMON024	g3021338	BLASTX	136	1e-11	83
1934	16	700727964H1	SOYMON009	g927505	BLASTX	137	1e-11	86
1935	16	700680648H1	SOYMON008	g3021337	BLASTN	226	1e-10	73
1936	16	701044547H1	SOYMON032	g927505	BLASTX	91	1e-9	76
1937	16	700649174H1	SOYMON003	g3021338	BLASTX	126	1e-9	83
1938	16531	701120682H1	SOYMON037	g3021337	BLASTN	716	1e-50	77
1939	1701	700993909H1	SOYMON011	g22633	BLASTX	112	1e-31	78
1940	1701	700955490H1	SOYMON022	g22633	BLASTX	176	1e-25	70
1941	1701	700682081H1	SOYMON008	g22633	BLASTX	147	1e-20	68
1942	1701	700988843H1	SOYMON011	g22633	BLASTX	90	1e-14	67
1943	1701	700740531H1	SOYMON012	g22633	BLASTX	92	1e-12	64
1944	1701	700790059H2	SOYMON011	g22633	BLASTX	92	1e-12	67
1945	1701	700872670H1	SOYMON018	g169037	BLASTX	144	1e-12	90
1946	1701	700990591H1	SOYMON011	g22632	BLASTN	199	1e-11	68
1947	1701	700743120H1	SOYMON012	g22633	BLASTX	92	1e-9	68
1948	1701	700994931H1	SOYMON011	g22633	BLASTX	92	1e-8	64
1949	1938	700738074H1	SOYMON012	g927507	BLASTX	134	1e-11	90
1950	239	701126904H1	SOYMON037	g169037	BLASTX	231	1e-24	81
1951	239	700668532H1	SOYMON006	g169037	BLASTX	202	1e-20	83
1952	239	700943660H1	SOYMON024	g169037	BLASTX	180	1e-17	84
1953	239	701009915H2	SOYMON019	g169037	BLASTX	180	1e-17	84
1954	239	701100047H2	SOYMON028	g169037	BLASTX	160	1e-15	84
1955	239	700794458H1	SOYMON017	g22633	BLASTX	131	1e-10	58
1956	239	700738441H1	SOYMON012	g169037	BLASTX	118	1e-8	78
1957	3425	700984050H1	SOYMON009	g3021337	BLASTN	874	1e-64	80
1958	3425	701014509H1	SOYMON019	g3021337	BLASTN	520	1e-60	80
1959	3425	701138819H1	SOYMON038	g3021337	BLASTN	815	1e-59	80
1960	3425	700977309H1	SOYMON009	g3021337	BLASTN	809	1e-58	80
1961	3425	700984876H1	SOYMON009	g3021337	BLASTN	813	1e-58	80
1962	3425	701046151H1	SOYMON032	g3021337	BLASTN	730	1e-52	80
1963	3425	700889668H1	SOYMON024	g3021337	BLASTN	737	1e-52	81
1964	3425	700976571H1	SOYMON009	g3021337	BLASTN	737	1e-52	81
1965	3425	701045371H1	SOYMON032	g3021337	BLASTN	716	1e-50	79
1966	3425	700548283H1	SOYMON002	g3021337	BLASTN	700	1e-49	81
1967	3425	701103461H1	SOYMON028	g3021337	BLASTN	705	1e-49	81
1968	3425	700898446H1	SOYMON027	g3021337	BLASTN	686	1e-48	83
1969	3425	701006432H1	SOYMON019	g3021337	BLASTN	688	1e-48	83
1970	3425	701041476H1	SOYMON029	g3021337	BLASTN	693	1e-48	81

1971	3425	700568335H1	SOYMON002	g3021337	BLASTN	678	1e-47	82
1972	3425	701046312H1	SOYMON032	g3021337	BLASTN	650	1e-45	85
1973	3425	701050171H1	SOYMON032	g3021337	BLASTN	650	1e-45	85
1974	3425	700685063H1	SOYMON008	g3021337	BLASTN	643	1e-44	83
1975	3425	701010250H2	SOYMON019	g3021337	BLASTN	542	1e-36	86
1976	3425	700665454H1	SOYMON005	g3021337	BLASTN	520	1e-34	80
1977	3425	701043888H1	SOYMON032	g3021337	BLASTN	495	1e-32	85
1978	3425	700726806H1	SOYMON009	g3021337	BLASTN	213	1e-23	76
1979	491	700997879H1	SOYMON018	g22632	BLASTN	789	1e-56	77
1980	491	700646208H1	SOYMON012	g22632	BLASTN	733	1e-52	76
1981	491	700559796H1	SOYMON001	g22632	BLASTN	715	1e-50	76
1982	491	700789784H1	SOYMON011	g22632	BLASTN	664	1e-46	76
1983	491	700683122H1	SOYMON008	g22632	BLASTN	485	1e-41	86
1984	491	701105914H1	SOYMON036	g22632	BLASTN	504	1e-41	73
1985	491	700558789H1	SOYMON001	g22632	BLASTN	607	1e-41	74
1986	491	700873051H1	SOYMON018	g22632	BLASTN	608	1e-41	75
1987	491	700684010H1	SOYMON008	g22632	BLASTN	597	1e-40	75
1988	491	700786096H2	SOYMON011	g22632	BLASTN	576	1e-39	75
1989	491	700731865H1	SOYMON010	g22632	BLASTN	582	1e-39	75
1990	491	701108111H1	SOYMON036	g22632	BLASTN	467	1e-38	75
1991	491	700740887H1	SOYMON012	g22632	BLASTN	567	1e-38	74
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1993	491	700996104H1	SOYMON018	g22632	BLASTN	476	1e-37	76
1994	491	700682145H1	SOYMON008	g22632	BLASTN	542	1e-36	74
1995	491	700737263H1	SOYMON010	g22632	BLASTN	526	1e-35	74
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1998	491	700646072H1	SOYMON011	g22632	BLASTN	537	1e-35	74
1999	491	701106662H1	SOYMON036	g22632	BLASTN	514	1e-34	74
2000	491	700684335H1	SOYMON008	g22632	BLASTN	516	1e-34	74
2001	491	701000609H1	SOYMON018	g22632	BLASTN	520	1e-34	74
2002	491	700685658H1	SOYMON008	g22632	BLASTN	520	1e-34	74
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2004	491	700730264H1	SOYMON009	g22632	BLASTN	502	1e-33	74
2005	491	700872948H1	SOYMON018	g22632	BLASTN	502	1e-33	74
2006	491	700685813H1	SOYMON008	g22632	BLASTN	502	1e-33	74
2007	491	701104554H1	SOYMON036	g22632	BLASTN	503	1e-33	74
2008	491	700960601H1	SOYMON022	g22632	BLASTN	503	1e-33	74
2009	491	700876633H1	SOYMON018	g22632	BLASTN	503	1e-33	74
2010	491	700739662H1	SOYMON012	g22632	BLASTN	504	1e-33	72
2011	491	700685904H1	SOYMON008	g22632	BLASTN	505	1e-33	72
2012	491	700995183H1	SOYMON011	g22632	BLASTN	513	1e-33	73
2013	491	700901996H1	SOYMON027	g22632	BLASTN	513	1e-33	74
2014	491	700727070H1	SOYMON009	g22632	BLASTN	490	1e-32	72
2015	491	700685790H1	SOYMON008	g22632	BLASTN	492	1e-32	74
2016	491	700998652H1	SOYMON018	g22632	BLASTN	494	1e-32	72
2017	491	700740465H1	SOYMON012	g22632	BLASTN	482	1e-31	74
2018	491	700682621H2	SOYMON008	g22632	BLASTN	484	1e-31	74
2019	491	700874316H1	SOYMON018	g22632	BLASTN	466	1e-30	73
2020	491	700686477H1	SOYMON008	g22632	BLASTN	473	1e-30	73
2021	491	700739979H1	SOYMON012	g22632	BLASTN	476	1e-30	74
2022	491	700739416H1	SOYMON012	g22632	BLASTN	476	1e-30	74
2023	491	700685976H1	SOYMON008	g22632	BLASTN	476	1e-30	74
2024	491	700739629H1	SOYMON012	g22632	BLASTN	486	1e-30	70

2025	491	700989163H1	SOYMON011	g22632	BLASTN	468	1e-29	72
2026	491	701000555H1	SOYMON018	g22632	BLASTN	477	1e-29	72
2027	491	700872702H1	SOYMON018	g22632	BLASTN	436	1e-28	72
2028	491	701000781H1	SOYMON018	g22632	BLASTN	460	1e-28	73
2029	491	700682760H1	SOYMON008	g22632	BLASTN	463	1e-28	72
2030	491	700740390H1	SOYMON012	g22632	BLASTN	440	1e-27	73
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2032	491	700557272H1	SOYMON001	g22632	BLASTN	250	1e-26	78
2033	491	700953343H1	SOYMON022	g22632	BLASTN	349	1e-26	74
2034	491	700741960H1	SOYMON012	g22632	BLASTN	430	1e-26	73
2035	491	700680247H2	SOYMON008	g22632	BLASTN	425	1e-25	67
2036	491	700680002H2	SOYMON008	g22632	BLASTN	241	1e-24	72
2037	491	700684827H1	SOYMON008	g22632	BLASTN	379	1e-24	74
2038	491	700956353H1	SOYMON022	g22632	BLASTN	410	1e-24	72
2039	491	700787513H1	SOYMON011	g22632	BLASTN	235	1e-22	72
2040	491	700725070H1	SOYMON009	g22632	BLASTN	241	1e-22	71
2041	491	700741111H1	SOYMON012	g22632	BLASTN	304	1e-22	73
2042	491	700985308H1	SOYMON009	g22632	BLASTN	241	1e-21	80
2043	491	700738230H1	SOYMON012	g22632	BLASTN	241	1e-21	72
2044	491	700991396H1	SOYMON011	g22632	BLASTN	350	1e-21	72
2045	491	700741276H1	SOYMON012	g22632	BLASTN	379	1e-21	71
2046	491	700740223H1	SOYMON012	g22632	BLASTN	241	1e-20	72
2047	491	700738808H1	SOYMON012	g22632	BLASTN	241	1e-20	72
2048	491	700997995H1	SOYMON018	g22632	BLASTN	241	1e-19	81
2049	491	700875139H1	SOYMON018	g22632	BLASTN	241	1e-19	71
2050	491	700989713H1	SOYMON011	g22632	BLASTN	241	1e-19	73
2051	491	700958366H1	SOYMON022	g22632	BLASTN	241	1e-18	71
2052	491	700683887H1	SOYMON008	g22632	BLASTN	344	1e-18	70
2053	491	700740788H1	SOYMON012	g22632	BLASTN	339	1e-17	70
2054	491	700743058H1	SOYMON012	g22632	BLASTN	205	1e-16	81
2055	491	700996423H1	SOYMON018	g22632	BLASTN	234	1e-16	80
2056	491	700686075H1	SOYMON008	g22632	BLASTN	241	1e-16	71
2057	491	700738811H1	SOYMON012	g22632	BLASTN	193	1e-15	72
2058	491	700998312H1	SOYMON018	g22632	BLASTN	234	1e-15	73
2059	491	700681825H1	SOYMON008	g22632	BLASTN	241	1e-15	81
2060	491	701109105H1	SOYMON036	g22632	BLASTN	290	1e-14	69
2061	491	701203741H2	SOYMON035	g22632	BLASTN	230	1e-13	78
2062	491	700740785H1	SOYMON012	g22632	BLASTN	287	1e-13	68
2063	491	700738486H1	SOYMON012	g22632	BLASTN	295	1e-13	64
2064	491	700739078H1	SOYMON012	g22632	BLASTN	178	1e-12	73
2065	491	701002287H1	SOYMON018	g22632	BLASTN	255	1e-12	74
2066	491	700742470H1	SOYMON012	g22632	BLASTN	278	1e-12	69
2067	491	700743421H1	SOYMON012	g22632	BLASTN	261	1e-11	71
2068	491	700744039H1	SOYMON012	g22632	BLASTN	265	1e-11	69
2069	491	700789444H2	SOYMON011	g22632	BLASTN	158	1e-10	87
2070	491	700741074H1	SOYMON012	g22632	BLASTN	178	1e-10	77
2071	491	700998877H1	SOYMON018	g22632	BLASTN	235	1e-10	72
2072	491	700740005H1	SOYMON012	g22633	BLASTX	75	1e-9	64
2073	491	700872703H1	SOYMON018	g169037	BLASTX	116	1e-9	83
2074	491	700743301H1	SOYMON012	g22632	BLASTN	241	1e-9	76
2075	491	700875039H1	SOYMON018	g22632	BLASTN	241	1e-9	72
2076	491	700742515H1	SOYMON012	g22632	BLASTN	241	1e-9	76
2077	491	700990557H1	SOYMON011	g22632	BLASTN	241	1e-9	76
2078	491	700743995H1	SOYMON012	g22632	BLASTN	241	1e-9	76

2079	491	700743495H1	SOYMON012	g22632	BLASTN	241	1e-9	76
2080	491	701001909H1	SOYMON018	g22632	BLASTN	241	1e-9	76
2081	491	701001445H1	SOYMON018	g169037	BLASTX	115	1e-8	92
2082	491	700554881H1	SOYMON001	g169037	BLASTX	116	1e-8	94
2083	491	700954194H1	SOYMON022	g169037	BLASTX	116	1e-8	94
2084	491	700996869H1	SOYMON018	g22632	BLASTN	230	1e-8	76
2085	491	700897820H1	SOYMON027	g22632	BLASTN	234	1e-8	74
2086	491	700742574H1	SOYMON012	g22632	BLASTN	234	1e-8	74
2087	491	700684738H1	SOYMON008	g22632	BLASTN	235	1e-8	75
2088	7368	700739343H1	SOYMON012	g927507	BLASTX	164	1e-15	88
2089	-GM32379	LIB3051-015-Q1-E1-B12	LIB3051	g3021337	BLASTN	260	1e-28	77
2090	-GM8265	LIB3039-048-Q1-E1-F11	LIB3039	g3021337	BLASTN	481	1e-29	65
2091	16	LIB3027-010-Q1-B1-B7	LIB3027	g3021337	BLASTN	1393	1e-107	82
2092	16	LIB3039-049-Q1-E1-B8	LIB3039	g3021337	BLASTN	1297	1e-99	83
2093	16	LIB3051-061-Q1-K1-E11	LIB3051	g3021337	BLASTN	1303	1e-99	84
2094	16	LIB3056-009-Q1-N1-A10	LIB3056	g3021337	BLASTN	1126	1e-96	84
2095	16	LIB3051-025-Q1-K1-E11	LIB3051	g3021337	BLASTN	1262	1e-96	83
2096	16	LIB3056-014-Q1-N1-E1	LIB3056	g3021337	BLASTN	1077	1e-94	81
2097	16	LIB3055-005-Q1-N1-A8	LIB3055	g3021337	BLASTN	1227	1e-93	84
2098	16	LIB3040-045-Q1-E1-A4	LIB3040	g3021337	BLASTN	1211	1e-92	83
2099	16	LIB3028-010-Q1-B1-G9	LIB3028	g3021337	BLASTN	1215	1e-92	83
2100	16	LIB3056-010-Q1-N1-G8	LIB3056	g3021337	BLASTN	1217	1e-92	84
2101	16	LIB3039-029-Q1-E1-A6	LIB3039	g3021337	BLASTN	1128	1e-85	85
2102	16	LIB3051-014-Q1-E1-D2	LIB3051	g3021337	BLASTN	716	1e-80	83
2103	16	LIB3030-010-Q1-B1-D7	LIB3030	g3021337	BLASTN	1052	1e-78	83
2104	16	LIB3051-094-Q1-K1-A9	LIB3051	g3021337	BLASTN	778	1e-74	83
2105	16	LIB3028-030-Q1-B1-C9	LIB3028	g3021337	BLASTN	953	1e-70	85
2106	16	LIB3052-004-Q1-N1-D8	LIB3052	g3021337	BLASTN	868	1e-63	82
2107	16	LIB3065-014-Q1-N1-A3	LIB3065	g3021337	BLASTN	540	1e-61	79
2108	16	LIB3050-019-Q1-K1-H1	LIB3050	g168420	BLASTX	223	1e-40	63
2109	16	LIB3051-062-Q1-K1-B5	LIB3051	g3021337	BLASTN	541	1e-38	79
2110	3425	LIB3051-067-Q1-K1-E7	LIB3051	g3021337	BLASTN	1082	1e-81	78

2111	3425	LIB3050-006-Q1-E1-G7	LIB3050	g3021337	BLASTN	752	1e-57	75
2112	491	LIB3028-011-Q1-B1-B9	LIB3028	g22632	BLASTN	911	1e-67	75
2113	491	LIB3028-011-Q1-B1-F2	LIB3028	g22632	BLASTN	886	1e-65	77

SOYBEAN FRUCTOSE-1,6-BISPHOSPHATASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2114	-700685384	700685384H1	SOYMON008	g21244	BLASTN	597	1e-49	80
2115	-700737915	700737915H1	SOYMON012	g515746	BLASTN	1316	1e-100	97
2116	-700741457	700741457H1	SOYMON012	g3041774	BLASTN	692	1e-58	80
2117	-700874831	700874831H1	SOYMON018	g515746	BLASTN	1295	1e-99	100
2118	-700996155	700996155H1	SOYMON018	g3041774	BLASTN	651	1e-45	83
2119	-700996632	700996632H1	SOYMON018	g515746	BLASTN	507	1e-51	90
2120	-700998027	700998027H1	SOYMON018	g515746	BLASTN	636	1e-65	94
2121	-701209548	701209548H1	SOYMON035	g3041774	BLASTN	642	1e-44	83
2122	10129	700870828H1	SOYMON018	g21244	BLASTN	827	1e-60	79
2123	10129	700741669H1	SOYMON012	g21244	BLASTN	657	1e-53	80
2124	10348	700555754H1	SOYMON001	g21244	BLASTN	466	1e-29	77
2125	10348	700991527H1	SOYMON011	g440591	BLASTX	169	1e-16	88
2126	13716	700898719H1	SOYMON027	g515746	BLASTN	1186	1e-90	97
2127	13716	700993540H1	SOYMON011	g515746	BLASTN	1179	1e-89	98
2128	13716	700909657H1	SOYMON022	g515746	BLASTN	568	1e-57	86
2129	1894	700555054H1	SOYMON001	g515746	BLASTN	1320	1e-101	100
2130	1894	700685264H1	SOYMON008	g515746	BLASTN	1323	1e-101	99
2131	1894	700558854H1	SOYMON001	g515746	BLASTN	695	1e-98	100
2132	1894	700554755H1	SOYMON001	g515746	BLASTN	767	1e-98	99
2133	1894	701000504H1	SOYMON018	g515746	BLASTN	626	1e-95	98
2134	1894	700738115H1	SOYMON012	g515746	BLASTN	1230	1e-93	100
2135	1894	700992933H1	SOYMON011	g515746	BLASTN	1074	1e-91	98
2136	1894	701107444H1	SOYMON036	g515746	BLASTN	1201	1e-91	99
2137	1894	700852823H1	SOYMON023	g515746	BLASTN	1041	1e-90	98
2138	1894	700733478H1	SOYMON010	g515746	BLASTN	1150	1e-90	97
2139	1894	701105185H1	SOYMON036	g515746	BLASTN	641	1e-87	89
2140	1894	700737830H1	SOYMON012	g515746	BLASTN	1060	1e-87	100
2141	1894	700685110H1	SOYMON008	g515746	BLASTN	597	1e-86	90
2142	1894	700968307H1	SOYMON036	g515746	BLASTN	1113	1e-84	97
2143	1894	700653014H1	SOYMON003	g515746	BLASTN	587	1e-82	90
2144	1894	700555504H1	SOYMON001	g515746	BLASTN	626	1e-81	88
2145	1894	700751540H1	SOYMON014	g515746	BLASTN	585	1e-77	91
2146	1894	700901976H1	SOYMON027	g515746	BLASTN	505	1e-73	87
2147	1894	700986496H1	SOYMON009	g515746	BLASTN	559	1e-73	90
2148	1894	700751580H1	SOYMON014	g515746	BLASTN	569	1e-72	89
2149	1894	700751532H1	SOYMON014	g515746	BLASTN	571	1e-72	90
2150	1894	700990937H1	SOYMON011	g515746	BLASTN	544	1e-71	88
2151	1894	700740789H1	SOYMON012	g515746	BLASTN	630	1e-69	100
2152	1894	700743994H1	SOYMON012	g515746	BLASTN	945	1e-69	100
2153	1894	700754374H1	SOYMON014	g515746	BLASTN	460	1e-62	91
2154	1894	701001295H1	SOYMON018	g515746	BLASTN	541	1e-62	97
2155	1894	701155952H1	SOYMON031	g515746	BLASTN	568	1e-51	83
2156	1894	700872212H1	SOYMON018	g515746	BLASTN	670	1e-47	100
2157	1894	700682196H1	SOYMON008	g515746	BLASTN	609	1e-41	98

2158	1894	700738779H1	SOYMON012	g515746	BLASTN	252	1e-16	82
2159	26568	700844816H1	SOYMON021	g21244	BLASTN	649	1e-45	78
2160	27512	701128049H1	SOYMON037	g440591	BLASTX	185	1e-18	87
2161	7128	700649846H1	SOYMON003	g440591	BLASTX	125	1e-15	81
2162	10348	LIB3030-010-Q1-B1-C7	LIB3030	g21244	BLASTN	476	1e-28	76

FRUCTOSE-6-PHOSPHATE,2-KINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2163	-700730441	700730441H1	SOYMON009	g3309583	BLASTX	179	1e-17	82
2164	-700953509	700953509H1	SOYMON022	g3170229	BLASTN	674	1e-47	75
2165	-700955121	700955121H1	SOYMON022	g3309582	BLASTN	303	1e-14	68
2166	-GM28972	LIB3050-012-Q1-E1-E9	LIB3050	g3170229	BLASTN	1073	1e-80	80

SOYBEAN PHOSPHOGLUCOISOMERASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2167	-700568558	700568558H1	SOYMON002	g1369950	BLASTX	165	1e-15	80
2168	-700845275	700845275H1	SOYMON021	g1100771	BLASTX	124	1e-10	53
2169	-700960755	700960755H1	SOYMON022	g1100771	BLASTX	153	1e-14	52
2170	18663	700838363H1	SOYMON020	g1100771	BLASTX	215	1e-22	63
2171	18663	700838355H1	SOYMON020	g1100771	BLASTX	155	1e-14	81
2172	19355	700897450H1	SOYMON027	g1100771	BLASTX	273	1e-31	74
2173	19355	700744258H1	SOYMON013	g1100771	BLASTX	207	1e-29	69
2174	19355	701153832H1	SOYMON031	g1100771	BLASTX	226	1e-23	58
2175	20088	700856114H1	SOYMON023	g1100771	BLASTX	176	1e-33	75
2176	20088	700670380H1	SOYMON006	g1100771	BLASTX	207	1e-33	71
2177	20088	700788785H2	SOYMON011	g1100771	BLASTX	120	1e-32	74
2178	20088	700847659H1	SOYMON021	g1100771	BLASTX	192	1e-31	84
2179	20088	701136417H1	SOYMON038	g1100771	BLASTX	169	1e-27	66
2180	31255	701207622H1	SOYMON035	g1100771	BLASTX	168	1e-29	61
2181	20088	LIB3051-014-Q1-E1-G3	LIB3051	g1100771	BLASTX	400	1e-68	73
2182	31255	LIB3056-008-Q1-N1-G8	LIB3056	g1100771	BLASTX	188	1e-52	62

SOYBEAN VACUOLAR H+-TRANSLOCATING-PYROPHOSPHATASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2183	-700660662	700660662H1	SOYMON004	g16347	BLASTN	540	1e-36	79
2184	-700793860	700793860H1	SOYMON017	g2706449	BLASTN	808	1e-58	78
2185	-700837007	700837007H1	SOYMON020	g16347	BLASTN	776	1e-55	78
2186	-700890647	700890647H1	SOYMON024	g790474	BLASTN	826	1e-60	81
2187	-700942978	700942978H1	SOYMON024	g790478	BLASTN	605	1e-63	82
2188	-700944280	700944280H1	SOYMON024	g790479	BLASTX	119	1e-10	76
2189	-700974544	700974544H1	SOYMON005	g1103711	BLASTN	854	1e-62	83
2190	-700984449	700984449H1	SOYMON009	g1103711	BLASTN	287	1e-12	71
2191	-700989248	700989248H1	SOYMON011	g534915	BLASTN	276	1e-14	67
2192	-701102931	701102931H1	SOYMON028	g2706449	BLASTN	438	1e-46	76
2193	-701106870	701106870H1	SOYMON036	g790478	BLASTN	623	1e-47	75
2194	-701122796	701122796H1	SOYMON037	g2258074	BLASTX	71	1e-15	73

2195	-701132123	701132123H1	SOYMON038	g790478	BLASTN	627	1e-43	81
2196	-701136557	701136557H1	SOYMON038	g16347	BLASTN	376	1e-33	77
2197	14021	700973215H1	SOYMON005	g2668745	BLASTN	435	1e-39	80
2198	14021	701109310H1	SOYMON036	g2668745	BLASTN	281	1e-25	83
2199	16	700891764H1	SOYMON024	g790479	BLASTX	172	1e-16	68
2200	19232	701061126H1	SOYMON033	g790474	BLASTN	935	1e-69	81
2201	19232	700962864H1	SOYMON022	g790474	BLASTN	874	1e-64	82
2202	20872	700754883H1	SOYMON014	g790478	BLASTN	824	1e-59	81
2203	20872	700971147H1	SOYMON005	g1103711	BLASTN	564	1e-54	79
2204	2813	700797861H1	SOYMON017	g16347	BLASTN	731	1e-52	79
2205	2813	700944850H1	SOYMON024	g2570500	BLASTN	738	1e-52	82
2206	2813	701056207H1	SOYMON032	g2570500	BLASTN	556	1e-46	80
2207	2813	700605115H2	SOYMON003	g2570500	BLASTN	478	1e-42	80
2208	2813	700897063H1	SOYMON027	g2570500	BLASTN	596	1e-40	80
2209	2813	700561829H1	SOYMON002	g2570500	BLASTN	570	1e-38	80
2210	2813	701204883H1	SOYMON035	g2668745	BLASTN	545	1e-36	77
2211	2813	700754984H1	SOYMON014	g2570500	BLASTN	527	1e-35	75
2212	2813	700854552H1	SOYMON023	g2570500	BLASTN	536	1e-35	79
2213	2813	700873337H1	SOYMON018	g2570500	BLASTN	505	1e-33	75
2214	2813	700873349H1	SOYMON018	g2570500	BLASTN	506	1e-33	75
2215	2813	700952403H1	SOYMON022	g2668745	BLASTN	499	1e-32	76
2216	2813	700846561H1	SOYMON021	g2570500	BLASTN	488	1e-31	75
2217	2813	700953987H1	SOYMON022	g2570500	BLASTN	461	1e-29	75
2218	2813	700568667H1	SOYMON002	g2570500	BLASTN	296	1e-24	79
2219	2813	700895231H1	SOYMON024	g2258074	BLASTX	207	1e-22	80
2220	2813	701101791H1	SOYMON028	g2668746	BLASTX	147	1e-13	77
2221	8040	701121224H1	SOYMON037	g534915	BLASTN	298	1e-14	77
2222	8040	700743066H1	SOYMON012	g2668746	BLASTX	140	1e-12	80
2223	8531	701005139H1	SOYMON019	g2258073	BLASTN	871	1e-63	79
2224	8531	701008308H1	SOYMON019	g534915	BLASTN	789	1e-57	76
2225	8531	700559054H1	SOYMON001	g2570500	BLASTN	790	1e-57	77
2226	8531	700942540H1	SOYMON024	g2706449	BLASTN	755	1e-54	80
2227	8531	700790983H1	SOYMON011	g2258073	BLASTN	431	1e-52	77
2228	8531	701007949H1	SOYMON019	g2570500	BLASTN	404	1e-41	70
2229	8531	701123827H1	SOYMON037	g534915	BLASTN	436	1e-26	75
2230	8531	701013616H1	SOYMON019	g534915	BLASTN	431	1e-25	78
2231	8531	700565624H1	SOYMON002	g2570501	BLASTX	169	1e-16	85
2232	8531	701121092H1	SOYMON037	g2570501	BLASTX	110	1e-15	60
2233	16	LIB3040-003-Q1-E1-F6	LIB3040	g633598	BLASTN	523	1e-51	74
2234	16	LIB3051-114-Q1-K1-G5	LIB3051	g790478	BLASTN	457	1e-48	79
2235	16	LIB3039-020-Q1-E1-A2	LIB3039	g790478	BLASTN	338	1e-30	74
2236	2813	LIB3028-026-Q1-B1-B7	LIB3028	g2570500	BLASTN	1029	1e-77	80
2237	8040	LIB3049-045-Q1-E1-C3	LIB3049	g2706449	BLASTN	752	1e-52	72
2238	8040	LIB3049-005-Q1-E1-A7	LIB3049	g2570501	BLASTX	154	1e-32	61
2239	8531	LIB3050-013-Q1-E1-G8	LIB3050	g2570500	BLASTN	748	1e-53	72
2240	8531	LIB3073-025-Q1-K1-D6	LIB3073	g534915	BLASTN	711	1e-49	78

2241	8531	LIB3050-012-Q1-E1-D1	LIB3050	g2258074	BLASTX	93	1e-31	74

SOYBEAN PYROPHOSPHATE-DEPENDENT FRUCTOSE-6-PHOSPHATE PHOSPHOTRANSFERASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2242	7899	701008645H1	SOYMON019	g169538	BLASTX	160	1e-15	83

INVERTASES

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2243	-700653543	700653543H1	SOYMON003	g1160487	BLASTN	541	1e-55	84
2244	-700992760	700992760H1	SOYMON011	g550319	BLASTX	117	1e-12	49
2245	-701005703	701005703H1	SOYMON019	g861157	BLASTX	213	1e-22	46
2246	-701047324	701047324H1	SOYMON032	g1160487	BLASTN	647	1e-45	81
2247	-701130328	701130328H1	SOYMON037	g167551	BLASTX	215	1e-22	61
2248	20460	700658149H1	SOYMON004	g861157	BLASTX	198	1e-20	72
2249	20460	701041452H1	SOYMON029	g402740	BLASTX	105	1e-13	76
2250	-GM31611	LIB3051-002-Q1-E1-B9	LIB3051	g1160487	BLASTN	1033	1e-77	77
2251	-GM34282	LIB3051-025-Q1-K1-C4	LIB3051	g1160487	BLASTN	1069	1e-80	79
2252	-GM34976	LIB3051-031-Q1-K1-A9	LIB3051	g1160487	BLASTN	769	1e-66	80
2253	31949	LIB3051-093-Q1-K1-B1	LIB3051	g1160487	BLASTN	948	1e-92	77
2254	31949	LIB3051-054-Q1-K2-D11	LIB3051	g1160487	BLASTN	903	1e-90	82

SOYBEAN SUCROSE SYNTHASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2255	-700565776	700565776H1	SOYMON002	g3169544	BLASTX	89	1e-8	64
2256	-700606005	700606005H2	SOYMON007	g2570066	BLASTN	1069	1e-80	89
2257	-700664186	700664186H1	SOYMON005	g2606080	BLASTN	426	1e-62	91
2258	-700668119	700668119H1	SOYMON006	g2570066	BLASTN	279	1e-14	83
2259	-700668348	700668348H1	SOYMON006	g2570066	BLASTN	693	1e-48	88
2260	-700671225	700671225H1	SOYMON006	g16525	BLASTN	617	1e-42	72
2261	-700673918	700673918H1	SOYMON007	g218332	BLASTN	152	1e-9	92
2262	-700726266	700726266H1	SOYMON009	g2606080	BLASTN	237	1e-21	79
2263	-700747171	700747171H1	SOYMON013	g2606080	BLASTN	735	1e-52	89
2264	-700747359	700747359H1	SOYMON013	g218332	BLASTN	447	1e-28	78
2265	-700787443	700787443H2	SOYMON011	g22485	BLASTN	1171	1e-95	98
2266	-700796035	700796035H1	SOYMON017	g2570066	BLASTN	1039	1e-77	90
2267	-700832792	700832792H1	SOYMON019	g2606080	BLASTN	444	1e-31	88
2268	-700836673	700836673H1	SOYMON020	g2570066	BLASTN	843	1e-61	85
2269	-700841855	700841855H1	SOYMON020	g2570066	BLASTN	425	1e-35	84
2270	-700851758	700851758H1	SOYMON023	g2570066	BLASTN	211	1e-15	91
2271	-700851991	700851991H1	SOYMON023	g2570066	BLASTN	768	1e-55	81
2272	-700852943	700852943H1	SOYMON023	g2606080	BLASTN	250	1e-13	85
2273	-700853396	700853396H1	SOYMON023	g2570067	BLASTX	145	1e-13	65

2274	-700872206	700872206H1	SOYMON018	g1488570	BLASTX	235	1e-25	64
2275	-700876641	700876641H1	SOYMON018	g2606080	BLASTN	410	1e-53	88
2276	-700890526	700890526H1	SOYMON024	g2606080	BLASTN	652	1e-60	83
2277	-700893784	700893784H1	SOYMON024	g3169543	BLASTN	217	1e-11	82
2278	-700909222	700909222H1	SOYMON022	g2570066	BLASTN	440	1e-44	72
2279	-700944438	700944438H1	SOYMON024	g3169543	BLASTN	669	1e-46	73
2280	-700945733	700945733H1	SOYMON024	g1488569	BLASTN	504	1e-33	66
2281	-700969926	700969926H1	SOYMON005	g2570066	BLASTN	674	1e-47	72
2282	-701001986	701001986H1	SOYMON018	g1146237	BLASTX	106	1e-9	45
2283	-701005687	701005687H1	SOYMON019	g2606080	BLASTN	591	1e-40	85
2284	-701012195	701012195H1	SOYMON019	g2606080	BLASTN	418	1e-46	77
2285	-701046403	701046403H1	SOYMON032	g2606080	BLASTN	574	1e-38	76
2286	-701058966	701058966H1	SOYMON033	g218332	BLASTN	529	1e-56	84
2287	-701150574	701150574H1	SOYMON031	g1041247	BLASTX	155	1e-14	74
2288	-701205210	701205210H1	SOYMON035	g218332	BLASTN	981	1e-72	85
2289	10445	700605276H2	SOYMON003	g2606080	BLASTN	860	1e-65	84
2290	10445	700832417H1	SOYMON019	g2606080	BLASTN	876	1e-64	82
2291	10445	700833214H1	SOYMON019	g2606080	BLASTN	740	1e-58	83
2292	10445	700832409H1	SOYMON019	g2606080	BLASTN	800	1e-57	84
2293	10445	701007169H1	SOYMON019	g2606080	BLASTN	691	1e-55	81
2294	10445	701005913H1	SOYMON019	g2606080	BLASTN	680	1e-52	83
2295	10445	701204549H2	SOYMON035	g2606080	BLASTN	732	1e-52	83
2296	10445	701208347H1	SOYMON035	g2606080	BLASTN	656	1e-49	83
2297	10445	700958980H1	SOYMON022	g2606080	BLASTN	670	1e-49	83
2298	10445	700988126H1	SOYMON009	g2606080	BLASTN	324	1e-47	78
2299	10445	700830464H1	SOYMON019	g2606080	BLASTN	347	1e-47	79
2300	10445	700763911H1	SOYMON019	g3169543	BLASTN	517	1e-47	75
2301	10445	700891996H1	SOYMON024	g2606080	BLASTN	667	1e-46	88
2302	10445	700725104H1	SOYMON009	g2606080	BLASTN	577	1e-45	81
2303	10445	701124001H1	SOYMON037	g2606080	BLASTN	648	1e-45	86
2304	10445	700833919H1	SOYMON019	g2606080	BLASTN	496	1e-41	79
2305	10445	701006692H1	SOYMON019	g2606080	BLASTN	536	1e-41	86
2306	10445	700905349H1	SOYMON022	g2606080	BLASTN	585	1e-39	75
2307	10445	701204596H2	SOYMON035	g2606080	BLASTN	521	1e-38	79
2308	10445	700958885H1	SOYMON022	g2606080	BLASTN	351	1e-36	81
2309	10445	701208390H1	SOYMON035	g2606080	BLASTN	259	1e-29	86
2310	10445	701003131H1	SOYMON019	g2606080	BLASTN	442	1e-26	76
2311	10445	701207712H1	SOYMON035	g2606080	BLASTN	260	1e-17	78
2312	10445	701215107H1	SOYMON035	g2606080	BLASTN	260	1e-14	88
2313	10445	700852649H1	SOYMON023	g2606080	BLASTN	254	1e-13	74
2314	11259	701063407H1	SOYMON033	g2570066	BLASTN	1100	1e-82	87
2315	11259	700674761H1	SOYMON007	g2570066	BLASTN	739	1e-71	86
2316	11259	700839148H1	SOYMON020	g2570066	BLASTN	919	1e-67	87
2317	11259	700674815H1	SOYMON007	g2570066	BLASTN	904	1e-66	87
2318	12890	701103318H1	SOYMON028	g2570066	BLASTN	1005	1e-74	86
2319	12890	700855911H1	SOYMON023	g2570066	BLASTN	569	1e-69	86
2320	12890	700850874H1	SOYMON023	g2570066	BLASTN	937	1e-69	90
2321	12890	700837552H1	SOYMON020	g2570066	BLASTN	888	1e-65	89
2322	14264	700677058H1	SOYMON007	g2606080	BLASTN	578	1e-39	99
2323	14264	700679301H1	SOYMON007	g2606080	BLASTN	325	1e-18	90
2324	14740	701214452H1	SOYMON035	g2570066	BLASTN	1072	1e-80	89
2325	14740	701044972H1	SOYMON032	g2570066	BLASTN	537	1e-43	87
2326	14740	701040560H1	SOYMON029	g2570066	BLASTN	302	1e-24	75
2327	14740	700793901H1	SOYMON017	g2570066	BLASTN	231	1e-14	84

2328	15394	701136903H1	SOYMON038	g2606080	BLASTN	936	1e-69	81
2329	15394	701004431H1	SOYMON019	g218332	BLASTN	942	1e-69	80
2330	15394	701006153H1	SOYMON019	g218332	BLASTN	920	1e-67	83
2331	15394	701138281H1	SOYMON038	g218332	BLASTN	485	1e-40	82
2332	15394	701209319H1	SOYMON035	g3169543	BLASTN	508	1e-33	81
2333	16344	700746372H1	SOYMON013	g2606080	BLASTN	471	1e-65	85
2334	16344	700945706H1	SOYMON024	g2606080	BLASTN	635	1e-65	84
2335	17781	700960671H1	SOYMON022	g2570066	BLASTN	966	1e-71	88
2336	17781	700838540H1	SOYMON020	g2570066	BLASTN	532	1e-62	83
2337	20151	700847184H1	SOYMON021	g2570066	BLASTN	762	1e-72	90
2338	20151	700831558H1	SOYMON019	g2570066	BLASTN	980	1e-72	89
2339	22196	701046171H1	SOYMON032	g2606080	BLASTN	1321	1e-101	99
2340	22196	701207390H1	SOYMON035	g2606080	BLASTN	1258	1e-95	98
2341	25275	701013025H1	SOYMON019	g2606080	BLASTN	1353	1e-103	98
2342	25275	700561738H1	SOYMON002	g2606080	BLASTN	953	1e-84	91
2343	25380	700667735H1	SOYMON006	g2570066	BLASTN	959	1e-71	87
2344	25380	701047629H1	SOYMON032	g2570066	BLASTN	774	1e-55	89
2345	26818	701047072H1	SOYMON032	g2606080	BLASTN	830	1e-60	87
2346	26818	700737511H1	SOYMON010	g3169543	BLASTN	607	1e-57	83
2347	31182	701098655H1	SOYMON028	g2570066	BLASTN	951	1e-70	85
2348	318	701052316H1	SOYMON032	g2606080	BLASTN	1555	1e-120	100
2349	318	701053115H1	SOYMON032	g2606080	BLASTN	1281	1e-111	96
2350	318	700983049H1	SOYMON009	g2606080	BLASTN	1438	1e-110	96
2351	318	701058416H1	SOYMON033	g2606080	BLASTN	1385	1e-106	100
2352	318	701013289H1	SOYMON019	g2606080	BLASTN	1374	1e-105	99
2353	318	701002784H2	SOYMON019	g2606080	BLASTN	1365	1e-104	100
2354	318	700868516H1	SOYMON016	g2606080	BLASTN	1195	1e-103	100
2355	318	700978851H1	SOYMON009	g2606080	BLASTN	1325	1e-101	98
2356	318	701204954H1	SOYMON035	g2606080	BLASTN	770	1e-100	100
2357	318	700889102H1	SOYMON024	g2606080	BLASTN	1048	1e-100	99
2358	318	701053120H1	SOYMON032	g218332	BLASTN	1109	1e-100	90
2359	318	700731734H1	SOYMON010	g2606080	BLASTN	1308	1e-100	97
2360	318	700972625H1	SOYMON005	g2606080	BLASTN	1120	1e-98	99
2361	318	701006566H1	SOYMON019	g2606080	BLASTN	983	1e-97	99
2362	318	700952789H1	SOYMON022	g2606080	BLASTN	1276	1e-97	97
2363	318	701141518H1	SOYMON038	g2606080	BLASTN	716	1e-96	99
2364	318	700653475H1	SOYMON003	g3169543	BLASTN	1262	1e-96	87
2365	318	700650832H1	SOYMON003	g2606080	BLASTN	643	1e-95	97
2366	318	700678981H1	SOYMON007	g2606080	BLASTN	1142	1e-95	96
2367	318	700890311H1	SOYMON024	g2606080	BLASTN	1200	1e-95	100
2368	318	700892212H1	SOYMON024	g2606080	BLASTN	1250	1e-95	97
2369	318	700943424H1	SOYMON024	g2606080	BLASTN	1251	1e-95	99
2370	318	700833982H1	SOYMON019	g2606080	BLASTN	1255	1e-95	100
2371	318	700834361H1	SOYMON019	g2606080	BLASTN	981	1e-94	99
2372	318	700746379H1	SOYMON013	g2606080	BLASTN	1108	1e-94	96
2373	318	700889648H1	SOYMON024	g2606080	BLASTN	1238	1e-94	99
2374	318	701054868H1	SOYMON032	g2606080	BLASTN	1243	1e-94	95
2375	318	700959914H1	SOYMON022	g2606080	BLASTN	1226	1e-93	96
2376	318	701011518H1	SOYMON019	g2606080	BLASTN	705	1e-92	99
2377	318	700734053H1	SOYMON010	g2606080	BLASTN	765	1e-92	100
2378	318	701005295H1	SOYMON019	g2606080	BLASTN	962	1e-92	93
2379	318	700945690H1	SOYMON024	g2606080	BLASTN	1054	1e-92	99
2380	318	701118196H1	SOYMON037	g2606080	BLASTN	1100	1e-92	95
2381	318	700673512H1	SOYMON007	g2606080	BLASTN	1211	1e-92	97

2382	318	700852712H1	SOYMON023	g2606080	BLASTN	1215	1e-92	98
2383	318	701004755H1	SOYMON019	g2606080	BLASTN	1221	1e-92	99
2384	318	700677915H1	SOYMON007	g2606080	BLASTN	685	1e-91	99
2385	318	700977846H1	SOYMON009	g2606080	BLASTN	731	1e-91	99
2386	318	700831789H1	SOYMON019	g2606080	BLASTN	1204	1e-91	97
2387	318	700754901H1	SOYMON014	g2606080	BLASTN	1205	1e-91	100
2388	318	700666594H1	SOYMON005	g2606080	BLASTN	1210	1e-91	100
2389	318	700750890H1	SOYMON014	g2606080	BLASTN	1188	1e-90	99
2390	318	700890229H1	SOYMON024	g2606080	BLASTN	1195	1e-90	100
2391	318	700732660H1	SOYMON010	g2606080	BLASTN	1154	1e-89	95
2392	318	700764730H1	SOYMON023	g2606080	BLASTN	1181	1e-89	99
2393	318	701050015H1	SOYMON032	g218332	BLASTN	1185	1e-89	89
2394	318	700870180H1	SOYMON016	g2606080	BLASTN	710	1e-88	100
2395	318	701204236H2	SOYMON035	g2606080	BLASTN	904	1e-88	98
2396	318	700645782H1	SOYMON010	g2606080	BLASTN	633	1e-87	95
2397	318	700831711H1	SOYMON019	g2606080	BLASTN	1025	1e-87	96
2398	318	701056026H1	SOYMON032	g2606080	BLASTN	1158	1e-87	96
2399	318	700678853H1	SOYMON007	g2606080	BLASTN	1161	1e-87	97
2400	318	700852424H1	SOYMON023	g2606080	BLASTN	913	1e-86	95
2401	318	701049116H1	SOYMON032	g3169543	BLASTN	1146	1e-86	89
2402	318	700977788H1	SOYMON009	g2606080	BLASTN	642	1e-85	94
2403	318	700833546H1	SOYMON019	g2606080	BLASTN	1134	1e-85	94
2404	318	701004915H1	SOYMON019	g2606080	BLASTN	591	1e-84	96
2405	318	700730093H1	SOYMON009	g2606080	BLASTN	755	1e-84	96
2406	318	701119060H1	SOYMON037	g2606080	BLASTN	824	1e-84	97
2407	318	700963024H1	SOYMON022	g2606080	BLASTN	1116	1e-84	90
2408	318	700563532H1	SOYMON002	g22037	BLASTN	1116	1e-84	87
2409	318	700755891H1	SOYMON014	g2606080	BLASTN	1117	1e-84	94
2410	318	700850605H1	SOYMON023	g2606080	BLASTN	1118	1e-84	94
2411	318	700888245H1	SOYMON024	g2606080	BLASTN	643	1e-83	98
2412	318	701037091H1	SOYMON029	g2606080	BLASTN	821	1e-83	95
2413	318	700673790H1	SOYMON007	g2606080	BLASTN	1104	1e-83	95
2414	318	700845518H1	SOYMON021	g2606080	BLASTN	673	1e-82	91
2415	318	700854591H1	SOYMON023	g2606080	BLASTN	606	1e-81	95
2416	318	700907167H1	SOYMON022	g2606080	BLASTN	920	1e-81	96
2417	318	700978575H1	SOYMON009	g218332	BLASTN	971	1e-81	91
2418	318	700853484H1	SOYMON023	g2606080	BLASTN	1079	1e-81	92
2419	318	701124012H1	SOYMON037	g218332	BLASTN	1083	1e-81	89
2420	318	700835387H1	SOYMON019	g2606080	BLASTN	1087	1e-81	96
2421	318	700749133H1	SOYMON013	g2606080	BLASTN	571	1e-80	98
2422	318	700727185H1	SOYMON009	g2606080	BLASTN	730	1e-80	98
2423	318	700869024H1	SOYMON016	g2606080	BLASTN	807	1e-79	96
2424	318	701013537H1	SOYMON019	g2606080	BLASTN	929	1e-79	87
2425	318	701010402H1	SOYMON019	g218332	BLASTN	1055	1e-79	85
2426	318	701107955H1	SOYMON036	g2606080	BLASTN	1058	1e-79	87
2427	318	700731653H1	SOYMON010	g2606080	BLASTN	578	1e-78	94
2428	318	700888950H1	SOYMON024	g218332	BLASTN	765	1e-78	88
2429	318	700894112H1	SOYMON024	g2606080	BLASTN	842	1e-78	98
2430	318	701005565H1	SOYMON019	g2606080	BLASTN	1024	1e-78	92
2431	318	700548286H1	SOYMON002	g2606080	BLASTN	1045	1e-78	88
2432	318	700975854H1	SOYMON009	g22037	BLASTN	1053	1e-78	86
2433	318	700944525H1	SOYMON024	g218332	BLASTN	1054	1e-78	89
2434	318	701061312H1	SOYMON033	g2606080	BLASTN	773	1e-77	87
2435	318	700831277H1	SOYMON019	g2606080	BLASTN	947	1e-77	97

2436	318	700788482H1	SOYMON011	g2606080	BLASTN	1038	1e-77	89
2437	318	701055686H1	SOYMON032	g2606080	BLASTN	1039	1e-77	90
2438	318	701054768H1	SOYMON032	g2606080	BLASTN	786	1e-76	88
2439	318	700854891H1	SOYMON023	g2606080	BLASTN	1030	1e-76	93
2440	318	701215276H1	SOYMON035	g2606080	BLASTN	1030	1e-76	90
2441	318	700944860H1	SOYMON024	g2606080	BLASTN	887	1e-75	96
2442	318	701010957H1	SOYMON019	g2606080	BLASTN	1011	1e-75	87
2443	318	701007175H1	SOYMON019	g2606080	BLASTN	1013	1e-75	90
2444	318	700725567H1	SOYMON009	g2606080	BLASTN	1013	1e-75	93
2445	318	700904972H1	SOYMON022	g22037	BLASTN	1015	1e-75	89
2446	318	700747391H1	SOYMON013	g2606080	BLASTN	1017	1e-75	87
2447	318	700747523H1	SOYMON013	g22037	BLASTN	836	1e-74	86
2448	318	700561819H1	SOYMON002	g218332	BLASTN	999	1e-74	82
2449	318	700835961H1	SOYMON019	g218332	BLASTN	1006	1e-74	87
2450	318	700562318H1	SOYMON002	g2606080	BLASTN	986	1e-73	84
2451	318	700745092H1	SOYMON013	g2606080	BLASTN	987	1e-73	88
2452	318	700832618H1	SOYMON019	g2606080	BLASTN	975	1e-72	87
2453	318	700891092H1	SOYMON024	g2606080	BLASTN	982	1e-72	88
2454	318	701119264H1	SOYMON037	g2606080	BLASTN	690	1e-71	89
2455	318	700894436H1	SOYMON024	g2606080	BLASTN	901	1e-71	91
2456	318	700894532H1	SOYMON024	g22037	BLASTN	959	1e-71	89
2457	318	700891712H1	SOYMON024	g22037	BLASTN	960	1e-71	89
2458	318	700895985H1	SOYMON027	g2606080	BLASTN	964	1e-71	89
2459	318	701203243H1	SOYMON035	g2606080	BLASTN	969	1e-71	88
2460	318	700985945H1	SOYMON009	g218332	BLASTN	713	1e-70	90
2461	318	700984768H1	SOYMON009	g2606080	BLASTN	781	1e-69	84
2462	318	700675710H1	SOYMON007	g2606080	BLASTN	784	1e-69	91
2463	318	700829561H1	SOYMON019	g218332	BLASTN	935	1e-69	87
2464	318	700964918H1	SOYMON022	g22037	BLASTN	942	1e-69	83
2465	318	701046747H1	SOYMON032	g2606080	BLASTN	422	1e-68	84
2466	318	700745512H1	SOYMON013	g3169543	BLASTN	457	1e-68	85
2467	318	700666671H1	SOYMON005	g218332	BLASTN	506	1e-68	87
2468	318	700889555H1	SOYMON024	g3169543	BLASTN	930	1e-68	86
2469	318	701147844H1	SOYMON031	g3169543	BLASTN	932	1e-68	86
2470	318	701206247H1	SOYMON035	g3169543	BLASTN	934	1e-68	82
2471	318	701103801H1	SOYMON036	g218332	BLASTN	723	1e-67	88
2472	318	700943746H1	SOYMON024	g218332	BLASTN	913	1e-67	86
2473	318	700745956H1	SOYMON013	g22037	BLASTN	921	1e-67	83
2474	318	700893512H1	SOYMON024	g218332	BLASTN	835	1e-66	90
2475	318	700897675H1	SOYMON027	g22037	BLASTN	899	1e-66	83
2476	318	700565777H1	SOYMON002	g2606080	BLASTN	510	1e-65	89
2477	318	700749851H1	SOYMON013	g2606080	BLASTN	887	1e-65	89
2478	318	700746286H1	SOYMON013	g2606080	BLASTN	876	1e-64	82
2479	318	700869142H1	SOYMON016	g2606080	BLASTN	885	1e-64	100
2480	318	700892442H1	SOYMON024	g2606080	BLASTN	872	1e-63	84
2481	318	700964153H1	SOYMON022	g22037	BLASTN	873	1e-63	83
2482	318	700898176H1	SOYMON027	g3169543	BLASTN	873	1e-63	84
2483	318	701056245H1	SOYMON032	g218332	BLASTN	543	1e-61	84
2484	318	700835360H1	SOYMON019	g218332	BLASTN	839	1e-61	88
2485	318	700749067H1	SOYMON013	g3169543	BLASTN	473	1e-60	86
2486	318	701008962H1	SOYMON019	g3169543	BLASTN	614	1e-60	90
2487	318	700980315H1	SOYMON009	g3169543	BLASTN	655	1e-60	84
2488	318	701202680H1	SOYMON035	g2606080	BLASTN	678	1e-60	89
2489	318	701202364H1	SOYMON035	g2606080	BLASTN	711	1e-60	85

2490	318	701037195H1	SOYMON029	g218332	BLASTN	439	1e-59	86
2491	318	701011681H1	SOYMON019	g3169543	BLASTN	459	1e-59	83
2492	318	700976368H1	SOYMON009	g218332	BLASTN	363	1e-58	85
2493	318	700829847H1	SOYMON019	g218332	BLASTN	384	1e-58	86
2494	318	700561920H1	SOYMON002	g2606080	BLASTN	809	1e-58	88
2495	318	701004573H1	SOYMON019	g2606080	BLASTN	813	1e-58	77
2496	318	701049462H1	SOYMON032	g3169543	BLASTN	450	1e-57	82
2497	318	700866272H1	SOYMON016	g3169543	BLASTN	421	1e-54	77
2498	318	700892632H1	SOYMON024	g2606080	BLASTN	453	1e-54	84
2499	318	701215184H1	SOYMON035	g218332	BLASTN	464	1e-54	88
2500	318	700831177H1	SOYMON019	g2606080	BLASTN	759	1e-54	85
2501	318	700835115H1	SOYMON019	g2606080	BLASTN	762	1e-54	81
2502	318	701015056H1	SOYMON019	g3169543	BLASTN	447	1e-53	81
2503	318	700675496H1	SOYMON007	g2606080	BLASTN	465	1e-53	95
2504	318	701052767H1	SOYMON032	g2606080	BLASTN	753	1e-53	88
2505	318	700833078H1	SOYMON019	g3169543	BLASTN	414	1e-52	84
2506	318	700869165H1	SOYMON016	g3169543	BLASTN	534	1e-51	84
2507	318	700831532H1	SOYMON019	g2606080	BLASTN	655	1e-51	100
2508	318	701010104H2	SOYMON019	g2606080	BLASTN	698	1e-51	85
2509	318	700890513H1	SOYMON024	g22037	BLASTN	575	1e-50	88
2510	318	700890952H1	SOYMON024	g2606080	BLASTN	709	1e-50	75
2511	318	700567301H1	SOYMON002	g22037	BLASTN	716	1e-50	82
2512	318	700945284H1	SOYMON024	g3169543	BLASTN	701	1e-49	75
2513	318	701206626H1	SOYMON035	g3169543	BLASTN	702	1e-49	81
2514	318	700748456H1	SOYMON013	g2606080	BLASTN	384	1e-48	77
2515	318	700981883H1	SOYMON009	g2606080	BLASTN	419	1e-48	85
2516	318	700942575H1	SOYMON024	g22037	BLASTN	340	1e-46	82
2517	318	700945125H1	SOYMON024	g2606080	BLASTN	405	1e-46	81
2518	318	700830469H1	SOYMON019	g3169543	BLASTN	636	1e-44	83
2519	318	700991669H1	SOYMON011	g218332	BLASTN	630	1e-43	83
2520	318	700866064H1	SOYMON016	g3169543	BLASTN	453	1e-41	84
2521	318	700866806H1	SOYMON016	g218332	BLASTN	607	1e-41	96
2522	318	700893154H1	SOYMON024	g2606080	BLASTN	539	1e-38	87
2523	318	700893118H1	SOYMON024	g2606080	BLASTN	539	1e-38	87
2524	318	701142963H2	SOYMON038	g218332	BLASTN	569	1e-38	90
2525	318	700945968H1	SOYMON024	g218332	BLASTN	572	1e-38	86
2526	318	700945788H1	SOYMON024	g2606080	BLASTN	514	1e-36	90
2527	318	700563455H1	SOYMON002	g2606080	BLASTN	496	1e-32	83
2528	318	700888936H1	SOYMON024	g3169543	BLASTN	498	1e-32	86
2529	318	701039594H1	SOYMON029	g22037	BLASTN	254	1e-28	84
2530	318	701015024H1	SOYMON019	g218333	BLASTX	65	1e-14	66
2531	318	700893166H1	SOYMON024	g22037	BLASTN	232	1e-8	85
2532	4258	700646449H1	SOYMON013	g22037	BLASTN	584	1e-39	70
2533	4258	700952838H1	SOYMON022	g20373	BLASTN	557	1e-37	70
2534	4413	700902256H1	SOYMON027	g2606080	BLASTN	1215	1e-99	97
2535	4413	700900032H1	SOYMON027	g2606080	BLASTN	720	1e-95	98
2536	4413	701006182H1	SOYMON019	g2606080	BLASTN	1179	1e-89	99
2537	4413	700831710H1	SOYMON019	g2606080	BLASTN	1070	1e-80	97
2538	4413	701008850H1	SOYMON019	g2606080	BLASTN	999	1e-74	99
2539	4413	701015432H1	SOYMON019	g2606080	BLASTN	813	1e-68	95
2540	4413	700987094H1	SOYMON009	g2606080	BLASTN	928	1e-68	84
2541	4413	700736179H1	SOYMON010	g2606080	BLASTN	753	1e-63	96
2542	4413	700890230H1	SOYMON024	g2606080	BLASTN	798	1e-57	95
2543	4413	701015314H1	SOYMON019	g2606080	BLASTN	639	1e-49	97

2544	4413	701052019H1	SOYMON032	g2606080	BLASTN	448	1e-37	95
2545	4748	701209527H1	SOYMON035	g2606080	BLASTN	1207	1e-91	93
2546	4748	700561984H1	SOYMON002	g2606080	BLASTN	542	1e-81	94
2547	4748	700895166H1	SOYMON024	g2606080	BLASTN	1004	1e-74	98
2548	4748	700843735H1	SOYMON021	g2606080	BLASTN	227	1e-20	93
2549	869	700650545H1	SOYMON003	g2606080	BLASTN	804	1e-107	94
2550	869	701205255H1	SOYMON035	g2606080	BLASTN	1135	1e-101	98
2551	869	700562091H1	SOYMON002	g2606080	BLASTN	1311	1e-100	92
2552	869	701213906H1	SOYMON035	g2606080	BLASTN	1300	1e-99	100
2553	869	700567712H1	SOYMON002	g2606080	BLASTN	634	1e-95	97
2554	869	701010943H1	SOYMON019	g2606080	BLASTN	1236	1e-94	99
2555	869	701006976H1	SOYMON019	g2606080	BLASTN	601	1e-93	98
2556	869	700752409H1	SOYMON014	g2606080	BLASTN	1080	1e-92	100
2557	869	701204769H1	SOYMON035	g2606080	BLASTN	795	1e-90	100
2558	869	701042737H1	SOYMON029	g2606080	BLASTN	1058	1e-90	99
2559	869	700832091H1	SOYMON019	g2606080	BLASTN	1116	1e-88	99
2560	869	701049161H1	SOYMON032	g2606080	BLASTN	1053	1e-86	96
2561	869	700906541H1	SOYMON022	g2606080	BLASTN	1087	1e-86	96
2562	869	701008182H1	SOYMON019	g2606080	BLASTN	1111	1e-86	92
2563	869	700831609H1	SOYMON019	g2606080	BLASTN	611	1e-84	92
2564	869	700834954H1	SOYMON019	g2606080	BLASTN	835	1e-84	100
2565	869	701037284H1	SOYMON029	g2606080	BLASTN	858	1e-83	94
2566	869	700561458H1	SOYMON002	g2606080	BLASTN	1019	1e-83	93
2567	869	701208357H1	SOYMON035	g2606080	BLASTN	1113	1e-83	99
2568	869	700747138H1	SOYMON013	g2606080	BLASTN	985	1e-80	93
2569	869	701014835H1	SOYMON019	g2606080	BLASTN	891	1e-78	89
2570	869	700956359H1	SOYMON022	g2606080	BLASTN	1052	1e-78	96
2571	869	701012740H1	SOYMON019	g2606080	BLASTN	643	1e-77	93
2572	869	701042523H1	SOYMON029	g2606080	BLASTN	667	1e-74	95
2573	869	701205775H1	SOYMON035	g2606080	BLASTN	745	1e-74	100
2574	869	701049184H1	SOYMON032	g2606080	BLASTN	600	1e-72	95
2575	869	700889179H1	SOYMON024	g2606080	BLASTN	942	1e-69	92
2576	869	700963920H1	SOYMON022	g2606080	BLASTN	718	1e-66	90
2577	869	700737476H1	SOYMON010	g2606080	BLASTN	548	1e-44	97
2578	869	701044544H1	SOYMON032	g2606080	BLASTN	462	1e-43	96
2579	869	700737636H1	SOYMON010	g2606080	BLASTN	426	1e-34	95
2580	9398	700837013H1	SOYMON020	g2570066	BLASTN	1025	1e-76	88
2581	9398	700891526H1	SOYMON024	g2570066	BLASTN	868	1e-63	87
2582	14740	LIB3051-038-Q1-K1-E10	LIB3051	g2570066	BLASTN	1331	1e-102	86
2583	31182	LIB3051-015-Q1-E1-F1	LIB3051	g2570066	BLASTN	1540	1e-119	88
2584	318	LIB3050-024-Q1-K1-H5	LIB3050	g2606080	BLASTN	1736	1e-135	95
2585	318	LIB3050-012-Q1-E1-F10	LIB3050	g2606080	BLASTN	1564	1e-125	98
2586	318	LIB3056-013-Q1-N1-H11	LIB3056	g3169543	BLASTN	1617	1e-125	86
2587	318	LIB3028-026-Q1-B1-F6	LIB3028	g3169543	BLASTN	1393	1e-107	84
2588	318	LIB3049-031-Q1-E1-B6	LIB3049	g3169543	BLASTN	1290	1e-98	90
2589	33428	LIB3051-085-Q1-K1-D11	LIB3051	g2570066	BLASTN	679	1e-53	86

2590	869	LIB3056-014-Q1-N1-G8	LIB3056	g2606080	BLASTN	1503	1e-132	96

SOYBEAN HEXOKINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2591	-700560085	700560085H1	SOYMON001	g1899024	BLASTN	456	1e-27	67
2592	-700752579	700752579H1	SOYMON014	g836808	BLASTX	113	1e-8	54
2593	-700753182	700753182H1	SOYMON014	g619928	BLASTX	234	1e-25	63
2594	-700838622	700838622H1	SOYMON020	g619927	BLASTN	767	1e-55	78
2595	-700840271	700840271H1	SOYMON020	g619927	BLASTN	525	1e-34	67
2596	-700844132	700844132H1	SOYMON021	g619927	BLASTN	474	1e-51	77
2597	-700898308	700898308H1	SOYMON027	g619927	BLASTN	464	1e-29	72
2598	-700904279	700904279H1	SOYMON022	g881521	BLASTX	129	1e-10	67
2599	-700904320	700904320H1	SOYMON022	g1899024	BLASTN	612	1e-42	71
2600	-700946357	700946357H1	SOYMON024	g619928	BLASTX	112	1e-18	69
2601	-700998007	700998007H1	SOYMON018	g1899024	BLASTN	367	1e-20	71
2602	-701097096	701097096H1	SOYMON028	g619927	BLASTN	488	1e-30	73
2603	-701102877	701102877H1	SOYMON028	g619927	BLASTN	551	1e-37	70
2604	-701103285	701103285H1	SOYMON028	g619928	BLASTX	179	1e-17	77
2605	-701105838	701105838H1	SOYMON036	g619928	BLASTX	274	1e-30	63
2606	-701138291	701138291H1	SOYMON038	g619927	BLASTN	819	1e-59	79
2607	12404	701065794H1	SOYMON034	g3087888	BLASTX	84	1e-11	44
2608	12404	701131030H1	SOYMON038	g1899025	BLASTX	120	1e-9	45
2609	12693	700846513H1	SOYMON021	g619927	BLASTN	459	1e-28	70
2610	12693	700656744H1	SOYMON004	g619927	BLASTN	251	1e-10	57
2611	12917	700906858H1	SOYMON022	g3087888	BLASTX	183	1e-32	80
2612	12917	700830011H1	SOYMON019	g619927	BLASTN	495	1e-32	70
2613	12917	701068501H1	SOYMON034	g619927	BLASTN	475	1e-29	72
2614	12917	701153981H1	SOYMON031	g3087887	BLASTN	440	1e-26	69
2615	222	700663332H1	SOYMON005	g619927	BLASTN	724	1e-51	76
2616	222	701142003H1	SOYMON038	g881520	BLASTN	542	1e-39	72
2617	222	700657213H1	SOYMON004	g881520	BLASTN	524	1e-34	73
2618	222	700833679H1	SOYMON019	g1899024	BLASTN	453	1e-28	80
2619	222	700556060H1	SOYMON001	g619927	BLASTN	463	1e-28	82
2620	23610	700984359H1	SOYMON009	g1899024	BLASTN	611	1e-42	73
2621	23610	701003284H1	SOYMON019	g1899024	BLASTN	577	1e-39	75
2622	25188	700760643H1	SOYMON015	g619927	BLASTN	701	1e-49	73
2623	25188	701056127H1	SOYMON032	g1899024	BLASTN	649	1e-45	70
2624	27316	701054167H1	SOYMON032	g3087888	BLASTX	177	1e-17	47
2625	27316	701054157H1	SOYMON032	g3087888	BLASTX	177	1e-17	47
2626	488	700682650H2	SOYMON008	g687676	BLASTN	730	1e-52	77
2627	488	700849894H1	SOYMON021	g687676	BLASTN	582	1e-39	76
2628	-GM32703	LIB3051-008-Q1-E1-C12	LIB3051	g1899024	BLASTN	981	1e-76	77
2629	-GM9523	LIB3049-003-Q1-E1-A6	LIB3049	g619928	BLASTX	203	1e-37	64
2630	12693	LIB3051-106-Q1-K1-A9	LIB3051	g619927	BLASTN	459	1e-38	71
2631	488	LIB3040-006-Q1-E1-A12	LIB3040	g687676	BLASTN	622	1e-41	76
2632	488	LIB3053-008-Q1-N1-C6	LIB3053	g687676	BLASTN	597	1e-39	75

2633	488	LIB3055-008-Q1-N1-F5	LIB3055	g687676	BLASTN	559	1e-36	75
2634	488	LIB3053-010-Q1-N1-D8	LIB3053	g687676	BLASTN	514	1e-32	75

SOYBEAN FRUCTOKINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2635	-700834049	700834049H1	SOYMON019	g1915974	BLASTX	112	1e-10	97
2636	-700905716	700905716H1	SOYMON022	g1915973	BLASTN	774	1e-55	77
2637	-700978126	700978126H1	SOYMON009	g1915973	BLASTN	565	1e-38	77
2638	-700983171	700983171H1	SOYMON009	g1915974	BLASTX	96	1e-9	93
2639	-701069652	701069652H1	SOYMON034	g297014	BLASTN	447	1e-27	73
2640	-701118004	701118004H2	SOYMON037	g2102690	BLASTN	440	1e-26	73
2641	-701209270	701209270H1	SOYMON035	g1052972	BLASTN	648	1e-45	79
2642	1174	700832430H1	SOYMON019	g1915973	BLASTN	638	1e-44	81
2643	1174	701101576H1	SOYMON028	g1915973	BLASTN	592	1e-40	79
2644	1174	700754333H1	SOYMON014	g1915973	BLASTN	323	1e-37	80
2645	1174	701004323H1	SOYMON019	g297014	BLASTN	560	1e-37	80
2646	1174	700988192H1	SOYMON009	g1915973	BLASTN	508	1e-33	78
2647	1174	700646337H1	SOYMON013	g1915974	BLASTX	153	1e-30	79
2648	1174	701039647H1	SOYMON029	g1915973	BLASTN	275	1e-12	80
2649	16472	701155250H1	SOYMON031	g1915973	BLASTN	642	1e-50	78
2650	16472	700953304H1	SOYMON022	g1915973	BLASTN	690	1e-48	79
2651	16472	700725996H1	SOYMON009	g1915973	BLASTN	362	1e-28	73
2652	17936	700965277H1	SOYMON022	g2102690	BLASTN	375	1e-42	77
2653	17936	700746240H1	SOYMON013	g2102690	BLASTN	606	1e-41	74
2654	22120	701215393H1	SOYMON035	g2102691	BLASTX	133	1e-11	86
2655	22586	701009695H1	SOYMON019	g2102690	BLASTN	696	1e-49	76
2656	22586	700900731H1	SOYMON027	g2102690	BLASTN	422	1e-26	76
2657	23551	701053585H1	SOYMON032	g2102691	BLASTX	120	1e-9	92
2658	28587	701156878H1	SOYMON031	g2102690	BLASTN	448	1e-33	72
2659	3876	700942858H1	SOYMON024	g297014	BLASTN	705	1e-49	74
2660	3876	701063105H1	SOYMON033	g1052972	BLASTN	679	1e-47	73
2661	3876	700844831H1	SOYMON021	g1915973	BLASTN	466	1e-37	72
2662	5530	700733713H1	SOYMON010	g1915974	BLASTX	156	1e-26	81
2663	5530	701057239H1	SOYMON033	g1915974	BLASTX	176	1e-17	92
2664	5530	700985231H1	SOYMON009	g297014	BLASTN	222	1e-16	79
2665	5805	701010614H1	SOYMON019	g1915973	BLASTN	958	1e-71	80
2666	5805	701003106H1	SOYMON019	g1915973	BLASTN	679	1e-64	81
2667	5805	700748895H1	SOYMON013	g1915973	BLASTN	475	1e-55	83
2668	5805	700892801H1	SOYMON024	g1915973	BLASTN	639	1e-55	80
2669	5805	700891914H1	SOYMON024	g1915973	BLASTN	639	1e-55	81
2670	5805	700962529H1	SOYMON022	g1915973	BLASTN	622	1e-54	82
2671	5805	700869294H1	SOYMON016	g1915973	BLASTN	760	1e-54	80
2672	5805	700986530H1	SOYMON009	g1915973	BLASTN	761	1e-54	80
2673	5805	700661115H1	SOYMON005	g1915973	BLASTN	682	1e-48	78
2674	5805	701041987H1	SOYMON029	g297014	BLASTN	475	1e-45	83
2675	5805	701006803H1	SOYMON019	g1915973	BLASTN	607	1e-41	80
2676	28587	LIB3028-008-Q1-B1-H3	LIB3028	g2102690	BLASTN	900	1e-66	68
2677	5530	LIB3055-004-Q1-N1-H3	LIB3055	g297014	BLASTN	606	1e-39	76

2678	5805	LIB3065-006-Q1-N1-F11	LIB3065	g1915973	BLASTN	954	1e-81	79

SOYBEAN NDP-KINASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2679	33331	701108520H1	SOYMON036	g758643	BLASTN	473	1e-31	75
2680	23595	LIB3050-018-Q1-E1-C4	LIB3050	g758643	BLASTN	295	1e-13	76
2681	33331	LIB3040-037-Q1-E1-D6	LIB3040	g758643	BLASTN	413	1e-47	79

SOYBEAN GLUCOSE-6-PHOSPHATE 1-DEHYDROGENASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2682	-700869140	700869140H1	SOYMON016	g2829880	BLASTX	164	1e-15	44
2683	-701065174	701065174H1	SOYMON034	g603219	BLASTX	86	1e-9	76
2684	-701130434	701130434H1	SOYMON037	g1197385	BLASTX	189	1e-19	55
2685	-701149522	701149522H1	SOYMON031	g603219	BLASTX	99	1e-8	71
2686	26484	701003905H1	SOYMON019	g1197385	BLASTX	138	1e-15	81
2687	9136	701038169H1	SOYMON029	g603219	BLASTX	139	1e-21	73
2688	9136	700903571H1	SOYMON022	g603219	BLASTX	144	1e-20	81
2689	9136	701045122H1	SOYMON032	g603219	BLASTX	100	1e-13	79

SOYBEAN PHOSPHOGLUCOMUTASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2690	-700554424	700554424H1	SOYMON001	g534982	BLASTX	133	1e-25	60
2691	-700556670	700556670H1	SOYMON001	g3294468	BLASTN	355	1e-43	74
2692	-700563871	700563871H1	SOYMON002	g2795876	BLASTX	101	1e-16	75
2693	-700565101	700565101H1	SOYMON002	g3294466	BLASTN	588	1e-40	68
2694	-700566749	700566749H1	SOYMON002	g1814400	BLASTN	475	1e-41	73
2695	-700681382	700681382H2	SOYMON008	g3294467	BLASTX	98	1e-11	48
2696	-700763827	700763827H1	SOYMON018	g3192042	BLASTX	257	1e-29	60
2697	-700865583	700865583H1	SOYMON016	g3192042	BLASTX	134	1e-17	57
2698	-700891379	700891379H1	SOYMON024	g534982	BLASTX	167	1e-15	53
2699	-700942816	700942816H1	SOYMON024	g3294466	BLASTN	636	1e-44	74
2700	-701004954	701004954H1	SOYMON019	g1814400	BLASTN	790	1e-56	78
2701	-701011364	701011364H1	SOYMON019	g534982	BLASTX	284	1e-32	67
2702	-701057063	701057063H2	SOYMON033	g1814401	BLASTX	121	1e-9	60
2703	-701119491	701119491H1	SOYMON037	g1814400	BLASTN	762	1e-54	76
2704	-701149254	701149254H1	SOYMON031	g534982	BLASTX	147	1e-19	52
2705	10032	700988921H1	SOYMON011	g1814400	BLASTN	908	1e-66	80
2706	10032	701136003H1	SOYMON038	g1814400	BLASTN	842	1e-61	78
2707	10032	700953253H1	SOYMON022	g1814400	BLASTN	808	1e-58	77
2708	10032	701103083H1	SOYMON028	g1814400	BLASTN	813	1e-58	78
2709	10131	701104852H1	SOYMON036	g3294466	BLASTN	302	1e-27	74
2710	10131	700970420H1	SOYMON005	g2829893	BLASTX	240	1e-26	56
2711	1180	701125681H1	SOYMON037	g2829893	BLASTX	163	1e-15	82
2712	1180	700559947H1	SOYMON001	g2829893	BLASTX	163	1e-15	82
2713	1180	700556009H1	SOYMON001	g2829893	BLASTX	102	1e-14	87
2714	13262	701006086H2	SOYMON019	g3294466	BLASTN	734	1e-52	75

2715	13262	701137937H1	SOYMON038	g3294466	BLASTN	491	1e-32	71
2716	13262	701004207H1	SOYMON019	g3294466	BLASTN	271	1e-30	75
2717	13262	700904551H1	SOYMON022	g3294466	BLASTN	473	1e-30	75
2718	13262	701014357H1	SOYMON019	g1814401	BLASTX	210	1e-21	83
2719	13262	701146638H1	SOYMON031	g1814401	BLASTX	111	1e-20	80
2720	13262	700833416H1	SOYMON019	g1814400	BLASTN	374	1e-20	74
2721	13262	701148967H1	SOYMON031	g1814401	BLASTX	194	1e-19	82
2722	13262	701156042H1	SOYMON031	g1814401	BLASTX	182	1e-18	67
2723	13262	700943365H1	SOYMON024	g1814401	BLASTX	168	1e-16	76
2724	13262	701105762H1	SOYMON036	g1814401	BLASTX	165	1e-15	83
2725	13262	701038338H1	SOYMON029	g1814400	BLASTN	186	1e-13	77
2726	13262	700645989H1	SOYMON011	g1814401	BLASTX	133	1e-11	78
2727	13262	700868941H1	SOYMON016	g1814400	BLASTN	181	1e-9	80
2728	19312	701121150H1	SOYMON037	g3294468	BLASTN	501	1e-61	79
2729	19312	700742959H1	SOYMON012	g3294468	BLASTN	440	1e-45	83
2730	19312	701135418H1	SOYMON038	g3294468	BLASTN	459	1e-42	79
2731	19312	700979514H2	SOYMON009	g1814400	BLASTN	612	1e-42	78
2732	19883	701133631H2	SOYMON038	g1814400	BLASTN	758	1e-54	75
2733	19883	700970758H1	SOYMON005	g1814400	BLASTN	717	1e-50	77
2734	19883	701153416H1	SOYMON031	g1814400	BLASTN	691	1e-48	76
2735	26278	701214005H1	SOYMON035	g534982	BLASTX	118	1e-8	47
2736	-GM1647	LIB3028-009-Q1-B1-F3	LIB3028	g534982	BLASTX	192	1e-42	57
2737	-GM17162	LIB3055-012-Q1-N1-B3	LIB3055	g1814400	BLASTN	491	1e-29	62
2738	13262	LIB3028-003-Q1-B1-B11	LIB3028	g1814400	BLASTN	1069	1e-80	76
2739	13262	LIB3054-009-Q1-N1-A12	LIB3054	g1814400	BLASTN	612	1e-40	73
2740	13262	LIB3054-009-Q1-N1-A5	LIB3054	g1814401	BLASTX	200	1e-36	73

SOYBEAN UDP-GLUCOSE PYROPHOSPHORYLASE

Seq No.	Cluster ID	CloneID	Library	NCBI gi	Method	Score	P-value	% Ident
2741	-700665357	700665357H1	SOYMON005	g1388021	BLASTX	183	1e-18	69
2742	-700674325	700674325H1	SOYMON007	g218000	BLASTN	645	1e-44	72
2743	-700835903	700835903H1	SOYMON019	g1388021	BLASTX	135	1e-11	68
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*Table Headings

Cluster ID

A cluster ID is arbitrarily assigned to all of those clones which belong to the same cluster at a given stringency and a particular clone will belong to only one cluster at a given stringency. If a cluster contains only a single clone (a "singleton"), then the cluster ID number will be negative, with an absolute value equal to the clone ID number of its single member. The cluster ID entries in the table refer to the cluster with which the particular clone in each row is associated.

Clone ID

The clone ID number refers to the particular clone in the PhytoSeq database. Each clone ID entry in the table refers to the clone whose sequence is used for (1) the sequence comparison whose scores are presented and/or (2) assignment to the particular cluster which is presented. Note that a clone may be included in this table even if its sequence comparison scores fail to meet the minimum standards for similarity. In such a case, the clone is included due solely to its association with a particular cluster for which sequences of one or more other member clones possess the required level of similarity.

Library

The library ID refers to the particular cDNA library from which a given clone is obtained. Each cDNA library is associated with the particular tissue(s), line(s) and developmental stage(s) from which it is isolated.

NCBI gi

Each sequence in the GenBank public database is arbitrarily assigned a unique NCBI gi (National Center for Biotechnology Information GenBank Identifier) number. In this table, the

NCBI gi number which is associated (in the same row) with a given clone refers to the particular GenBank sequence which is used in the sequence comparison. This entry is omitted when a clone is included solely due to its association with a particular cluster.

Method

The entry in the "Method" column of the table refers to the type of BLAST search that is used for the sequence comparison. "CLUSTER" is entered when the sequence comparison scores for a given clone fail to meet the minimum values required for significant similarity. In such cases, the clone is listed in the table solely as a result of its association with a given cluster for which sequences of one or more other member clones possess the required level of similarity.

Score

Each entry in the "Score" column of the table refers to the BLAST score that is generated by sequence comparison of the designated clone with the designated GenBank sequence using the designated BLAST method. This entry is omitted when a clone is included solely due to its association with a particular cluster. If the program used to determine the hit is HMMSW then the score refers to HMMSW score.

P-Value

The entries in the P-Value column refer to the probability that such matches occur by chance.

%Ident

The entries in the "%Ident" column of the table refer to the percentage of identically matched nucleotides (or residues) that exist along the length of that portion of the sequences which is aligned by the BLAST comparison to generate the statistical scores presented. This entry is omitted when a clone is included solely due to its association with a particular cluster.

We claim:

1. A substantially purified nucleic acid molecule that encodes a maize or a soybean enzyme or fragment thereof, wherein said maize or soybean enzyme is selected from the group consisting of:

(a) triose phosphate isomerase;

(b) fructose 1,6-bisphosphate aldolase;

(c) fructose 1,6-bisphosphate;

(d) fructose 6-phosphate 2-kinase;

(e) phosphoglucoisomerase;

(f) vacuolar H^+ translocating-pyrophosphatase;

(g) pyrophosphate-dependent fructose-6-phosphate phosphotransferase;

(h) invertase;

(i) sucrose synthase;

(j) hexokinase;

(k) fructokinase;

(l) NDP-kinase;

(m) glucose-6-phosphate 1-dehydrogenase;

(n) phosphoglucomutase; and

(o) UDP-glucose pyrophophorylase.

2. The substantially purified nucleic acid molecule according to claim 1, wherein said nucleic acid molecule comprises a nucleic acid sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 2814.

3. A substantially purified maize or soybean enzyme or fragment thereof, wherein said maize or soybean enzyme is selected from the group consisting of:

(a) triose phosphate isomerase or fragment thereof;

(b) fructose 1,6-bisphosphate aldolase or fragment thereof;

(c) fructose 1,6-bisphosphate or fragment thereof;

(d) fructose 6-phosphate 2-kinase or fragment thereof;

(e) phosphoglucoisomerase or fragment thereof;

(f) vacuolar H^+ translocating-pyrophosphatase or fragment thereof;

(g) pyrophosphate-dependent fructose-6-phosphate phosphotransferase or fragment thereof;

(h) invertase or fragment thereof;

(i) sucrose synthase or fragment thereof;

(j) hexokinase or fragment thereof;

(k) fructokinase or fragment thereof;

(l) NDP-kinase or fragment thereof;

(m) glucose-6-phosphate 1-dehydrogenase or fragment thereof;

(n) phosphoglucomutase or fragment thereof; and

(o) UDP-glucose pyrophophorylase or fragment thereof.

4. A substantially purified maize or soybean enzyme or fragment thereof according to claim 3, wherein said maize or soybean enzyme or fragment thereof is encoded by a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of consisting of SEQ ID NO: 1 through SEQ ID NO: 2814.

5. A transformed plant having a nucleic acid molecule which comprises:

(A) an exogenous promoter region which functions in a plant cell to cause the production of a mRNA molecule;

(B) a structural nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of

(a) a nucleic acid sequence that encodes for triose phosphate isomerase or fragment thereof;

(b) a nucleic acid sequence that encodes for fructose 1,6-bisphosphate aldolase or fragment thereof;

(c) a nucleic acid sequence that encodes for fructose 1,6-bisphosphate or fragment thereof;

(d) a nucleic acid sequence that encodes for fructose 6-phosphate 2-kinase or fragment thereof;

(e) a nucleic acid sequence that encodes for phosphoglucoisomerase or fragment thereof;

(f) a nucleic acid sequence that encodes for vacuolar H^+ translocating-pyrophosphatase or fragment thereof;

(g) a nucleic acid sequence that encodes for pyrophosphate-dependent fructose-6-phosphate phosphotransferase or fragment thereof;

(h) a nucleic acid sequence that encodes for invertase or fragment thereof;

(i) a nucleic acid sequence that encodes for sucrose synthase or fragment thereof;

(j) a nucleic acid sequence that encodes for hexokinase or fragment thereof;

(k) a nucleic acid sequence that encodes for fructokinase or fragment thereof;

(l) a nucleic acid sequence that encodes for NDP-kinase or fragment thereof;

(m) a nucleic acid sequence that encodes for glucose-6-phosphate 1-dehydrogenase or fragment thereof;

(n) a nucleic acid sequence that encodes for phosphoglucomutase or fragment thereof;

(o) a nucleic acid sequence that encodes for UDP-glucose pyrophophorylase or fragment thereof; and

(p) a nucleic acid sequence which is complementary to any of the nucleic acid sequences of (a) through (o); and

(C) a 3' non-translated sequence that functions in said plant cell to cause termination of transcription and addition of polyadenylated ribonucleotides to a 3' end of said mRNA molecule.

6. The transformed plant according to claim 5, wherein said structural gene is complementary to any of the nucleic acid sequences of (a) through (o).

ABSTRACT

The present invention is in the field of plant biochemistry. More specifically the invention relates to nucleic acid sequences from plant cells, in particular, nucleic acid sequences from maize and soybean plants associated with the sucrose pathway. The invention encompasses nucleic acid molecules that encode proteins and fragments of proteins. In addition, the invention also encompasses proteins and fragments of proteins so encoded and antibodies capable of binding these proteins or fragments. The invention also relates to methods of using the nucleic acid molecules, proteins and fragments of proteins and antibodies, for example for genome mapping, gene identification and analysis, plant breeding, preparation of constructs for use in plant gene expression and transgenic plants.

<110> Cheikh, Nordine
Fisher, Dane
Liu, Jingdong

<120> Nucleic Acid Molecules And Other Molecules Associated With The Sucrose Pathway

<130> 04983.0015.US01/38-21(15089)B

<150> No. 60/067,000 filed November 24, 1997; No. 60/069,472 filed December 9, 1997; No. 60/072,888 filed January 27, 1998; No. 60/074,201 filed February 10, 1998; No. 60/074,282 filed February 10, 1998; No. 60/074,280 filed February 10, 1998; No. 60/074,281 filed February 10, 1998; No. 60/074,566 filed February 12, 1998; No. 60/074,567 filed February 12, 1998; No. 60/074,565 filed February 12, 1998; No. 60/075,462 filed February 19, 1998; No. 60/074,789 filed February 19, 1998; No. 60/075,459 filed February 19, 1998; No. 60/075,461 filed February 19, 1998; No. 60/075,464 filed February 19, 1998; No. 60/075,460 filed February 19, 1998; No. 60/075,463 filed February 19, 1998; No. 60/076,912 filed March 6, 1998; No. 60/077,231 filed March 9, 1998; No. 60/077,229 filed March 9, 1998; No. 60/077,230 filed March 9, 1998; No. 60/078,368 filed March 18, 1998; No. 60/080,844 filed April 7, 1998; No. 60/083,067 filed April 27, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants.(soymon016)" docket No. 38-21(15348)A filed April 29, 1998; No. 60/083,387 filed April 29, 1998; No. 60/083,388 filed April 29, 1998; No. 60/083,389 filed April 29, 1998, "Nucleic Acid Molecules and Other Molecules Associated with the Phosphogluconate Pathway." docket No. 38-21(15365)A filed April 30, 1998; No. 60/085,224 filed May 13, 1998, No. 60/085,223 filed May 13, 1998; No. 60/085,222 filed May 13, 1998; No. 60/086,186 filed May 21, 1998; No. 60/086,187 filed May 21, 1998; No. 60/086,185 filed May 21, 1998; No. 60/086,184 filed May 21, 1998; No. 60/086,183 filed May 21, 1998; No. 60/086,188 filed May 21, 1998; No. 60/087,422 filed June 1, 1998; No. 60/089,524 filed June 16, 1998; No. 60/089,810 filed June 18, 1998; No. 60/089,814 filed June 18, 1998; No. 60/089,793 filed June 18, 1998; No. 60/090,170 filed June 22, 1998, No. 60/090,928 filed June 26, 1998; No. 60/091,035 filed June 29, 1998; No. 60/091,405 filed June 30, 1998, No. 60/092,036 filed July 8, 1998; No. 60/099,667 filed September 9, 1998; No. 60/099,670 filed September 9, 1998; No. 60/099,697 filed September 9, 1998; No. 60/100,674 filed September 16, 1998; No. 60/100,673 filed September 16, 1998; No. 60/100,672 filed September 16, 1998; No. 60/101,131 filed September 21, 1998; No. 60/101,132 filed September 21, 1998; No. 60/101,130 filed

September 21, 1998; No. 60/101,508 filed September 22, 1998; No. 60/101,344 filed September 22, 1998; No. 60/101,347 filed September 22, 1998; No. 60/101,343 filed September 22, 1998; No. 60/101,707 filed September 25, 1998; No. 60/104,126 filed October 13, 1998; No. 60/104, 128 filed October 13, 1998; No. 60/104,127 filed October 13, 1998; No. 60/104,124 filed October 13, 1998, No. 60/104,123 filed October 13, 1998; No. 60/109,018 filed November 18, 1998; No. 60/108,996 filed November 18, 1998, "Nucleic Acid Molecules and Other Molecules Associated With Plants" docket No. 38-21(15075)B filed November 24, 1998; No. 09/210,297 filed December 8, 1998, "Nucleic acid Molecules and other Molecules associated with Plants" docket No. 38-21(15668)A filed December 11, 1998; No. 60/113,224 filed December 22, 1998 and "Nucleic Acid Molecules and Other Molecules Associated with Transcription in Plants" docket No. 38-21(15300)B filed January 12, 1999

<151> No. 60/067,000 filed November 24, 1997; No. 60/069,472 filed December 9, 1997; No. 60/072,888 filed January 27, 1998; No. 60/074,201 filed February 10, 1998; No. 60/074,282 filed February 10, 1998; No. 60/074,280 filed February 10, 1998; No. 60/074,281 filed February 10, 1998; No. 60/074,566 filed February 12, 1998; No. 60/074,567 filed February 12, 1998; No. 60/074,565 filed February 12, 1998; No. 60/075,462 filed February 19, 1998; No. 60/074,789 filed February 19, 1998; No. 60/075,459 filed February 19, 1998; No. 60/075,461 filed February 19, 1998; No. 60/075,464 filed February 19, 1998; No. 60/075,460 filed February 19, 1998; No. 60/075,463 filed February 19, 1998; No. 60/076,912 filed March 6, 1998; No. 60/077,231 filed March 9, 1998; No. 60/077,229 filed March 9, 1998; No. 60/077,230 filed March 9, 1998; No. 60/078,368 filed March 18, 1998; No. 60/080,844 filed April 7, 1998; No. 60/083,067 filed April 27, 1998, "Nucleic Acid Molecules and Other Molecules Associated with Plants.(soymon016)" docket No. 38-21(15348)A filed April 29, 1998; No. 60/083,387 filed April 29, 1998; No. 60/083,388 filed April 29, 1998; No. 60/083,389 filed April 29, 1998, "Nucleic Acid Molecules and Other Molecules Associated with the Phosphogluconate Pathway." docket No. 38-21(15365)A filed April 30, 1998; No. 60/085,224 filed May 13, 1998, No. 60/085,223 filed May 13, 1998; No. 60/085,222 filed May 13, 1998; No. 60/086,186 filed May 21, 1998; No. 60/086,187 filed May 21, 1998; No. 60/086,185 filed May 21, 1998; No. 60/086,184 filed May 21, 1998; No. 60/086,183 filed May 21, 1998; No. 60/086188 filed May 21, 1998; No. 60/087,422 filed June 1, 1998; No. 60/089, 524 filed June 16, 1998; No. 60/089,810 filed June 18, 1998; No. 60/089,814 filed June 18, 1998; No. 60/089,793 filed June 18, 1998; No. 60/090,170 filed June 22, 1998, No. 60/090,928 filed June 26, 1998; No. 60/091,035

filed June 29, 1998; No. 60/091,405 filed June 30, 1998, No. 60/092,036 filed July 8, 1998; No. 60/099,667 filed September 9, 1998; No. 60/099,670 filed September 9, 1998; No. 60/099,697 filed September 9, 1998; No. 60/100,674 filed September 16, 1998; No. 60/100,673 filed September 16, 1998; No. 60/100,672 filed September 16, 1998; No. 60/101,131 filed September 21, 1998; No. 60/101,132 filed September 21, 1998; No. 60/101,130 filed September 21, 1998; No. 60/101,508 filed September 22, 1998; No. 60/101,344 filed September 22, 1998; No. 60/101,347 filed September 22, 1998; No. 60/101,343 filed September 22, 1998; No. 60/101,707 filed September 25, 1998; No. 60/104,126 filed October 13, 1998; No. 60/104, 128 filed October 13, 1998; No. 60/104,127 filed October 13, 1998; No. 60/104,124 filed October 13, 1998, No. 60/104,123 filed October 13, 1998; No. 60/109,018 filed November 18, 1998; No. 60/108,996 filed November 18, 1998, "Nucleic Acid Molecules and Other Molecules Associated With Plants" docket No. 38-21(15075)B filed November 24, 1998; No. 09/210,297 filed December 8, 1998, "Nucleic acid Molecules and other Molecules associated with Plants" docket No. 38-21(15668)A filed December 11, 1998; No. 60/113,224 filed December 22, 1998 and "Nucleic Acid Molecules and Other Molecules Associated with Transcription in Plants" docket No. 38-21(15300)B filed January 12, 1999

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<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (30)
<223>

<400> 8

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tgaaatgctt gttaatatgg gaattccttg ggttatta 98

<210> 9
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 9

aatccacctc aatacatctt aatacaccca aaatgccgcg ccaattcttc gtcggaggca 60

acttcaagat gaatggagtc actgactcta tcaagtccat cgtctctaac atcaacaact 120

ccaagcgtga cccgtccacc gaagtcgtca tcgcccctcc cgccatctat ctcgcgctca 180

cccgcgcact tgccgacccc tcagtcggtg tctcggccca gaacgtctat gacaagccta 240

gcggtgctta tac 253

<210> 10
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 10

ggtaaacctg caggtgccct gggtcatttt gggacattct gagcgcagag ctctgttggg 60

tgaatccagt gattttgttg ctgataaagt tgcatatgca ctcactcaag gtctcaaggt 120

aattgcttgc attggtgaga cccttgagca gagagaggca ggaacaacaa tggatgttgt 180

tgctgcacaa acaaaggcta ttgctgaaaa aatatcagat tggacaaata ttgtgttggc 240

atatgaacca gtttgggcta ttggtaccgg caaagttgca actcctgctc 290

<210> 11
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 11

tggtgaatcc agtgattttg ttgctgataa agttgcatat gcactcactc aaggtctcaa 60

ggtaattgct tgcattggtg agacccttga gcagagagac gcaggaacaa caatggatgt 120

tgttgctgca caaacaaagg ctattgctga aaaaatatca gattggacaa atattgtgtt 180

ggcatatgaa ccagtttggg ctattggtac cggcaaagtt gcaattccgg ttcaggctca 240

ggaggtccat gatggc 256

<210> 12
<211> 163
<212> nucleic acid
<213> Zea mays

<400> 12

ggtcaatctt cttggcctca cgatacttgc ggagaaggcg cctcagcaca cgcatcctcc 60

tcatccacag aaccttggtg ggtagcctag cctccctggt acccctacgc ttaccatatc 120

ctgagtggcg tccctttgc ttggcgtcat gtgcccttct tgc 163

<210> 13
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 13

gctgcgccaa gagttccatg ttgctgctca gaactgccgg gtgaagaagg gaggtgcttt 60

cactggtgaa gtcagtgctg agatgctcgt caaccttggt gttccctggg tcattcttgg 120

acactctgaa aggagagctc tgctgggaga atcaaatgaa tttgttggag acaaggttgc 180

gtatgccctg tctcagggac taaaggtcat tgcatgtgtt ggtgagaccc ttgagcagag 240

ggaggctggg tctaccatgg atgttgttgc tgcacaaaca aaagcaattg ctgagaagat 300

caaggactgg 310

<210> 14
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 14

gtcaagagcc agctgcgcca agagttccat gttgctgctc agaacttctg ggtgaagaag 60

ggaggtgctt tcactggtga agtcagtgct gagatgctcg tcaaccttgg tgttccctgg 120

gtcattcttg gacactctga aaggagagct ctgctgggag aatcaaatga atttgttgga 180

gacaaggttg cgtatgccct gtctcaggga ctaaaggtca ttgcatgtgt tggtgagacc 240

cttgagcaga gggaggctgg gtctaccatg gatgttgttg ctgcacaaac aaaagca 297

<210> 15
<211> 305
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (282)
<223>

<400> 15

gagctctgct gggagaatca aatgaatttg ttggagacaa ggttgcgtat gccctgtctc 60

agggactaaa ggtcattgca tgtgttggtg agacacttga gcagagggag gctgggtcta 120

ccatggaggt tgttgctgca caaacaaaag caattgctga gaagatcaag gactggagca 180

acgtagttgt tgcctatgaa ccagtttggg ctattggaac tggtaaagtt gccaccccag 240

ctcaggctca ggaagtgcac gcctccctga gggattggct anagaccaac gtcagccctg 300

aggtt 305

<210> 16
<211> 321
<212> nucleic acid
<213> Zea mays

<400> 16

cccacgcgtc cggtaaagtt gccaccccag ctcaggctca ggaagtgcac gcctccctga 60

gggattggct aaagaccaat gccagccctg aggttgctga atctactagg atcatctacg 120

gaggctctgt aactgctgcg aactgcaaag agctagcagc acagcctgat gtcgatggtt 180

ttcttgtcgg tggagcttct ttgaagcctg agttcatcga catcatcaac gcggccaccg 240

tgaagtccgc ttaagatgct acgctgaaga cgaacatact tttttttgc tcaactgtgc 300

tatgtaagct agtagctttt g 321

<210> 17
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 17

ctacggaggc tctgtaactg ctgcgaactg caaagagcta gcagcacagc ctgatgtcga 60

tggttttctt gtcggtggag cttctttgaa gcctgagttc atcgacatca tcaacgcggc 120

caccgtgaag tccgcttaag atgctacgct gaagacgaac atactttttt tttgctcaac 180

tgtgctatgt aagctagtag cttttgcgca ggagcagaga ctgttttgcc tgccccccaac 240

ttctagcttg agcttgctaa taatgtttac ctctggacgt atcaa 285

<210> 18
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 18

ccaatctaga agcacccctc tccctctctc tctcttcgcc gtccgaagct ccgcaccccca 60

atctaatcga cacctcaccg agatgggccg caagttcttc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcagat gttgtggagg tcgttgtcag ccctccttat gtcttccttc ctgtggtcaa 240

gagccagctg cgccaagagt tccatgttgc tgctcagaac tgctgggtga agaagggagg 300

tgctttcact ggtgaagtca gtgctgagat gctcgtca 338

<210> 19
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 19

ggtgaagtca gtgctgagat gctcgtcaac cttggtgttc cctgggtcat tcttggacac 60

tctgaaagga gagctctgct gggagaatca aatgaatttg ttggagacaa ggttgcgtat 120

gccctgtctc agggactaaa ggtcattgca tgtgttggtg agacccttga gcagagggag 180

gctgggtcta ccatggatgt tgttgctgca caaacaaaag caattgctga gaagatcaag 240

gactggagca acgtagttgt tgcctatgaa ccagtttggg ctattggaac tggtaaag 298

<210> 20
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 20

gtcagtgctg agatgctcgt caaccttggt gttccctggg tcattcttgg acactctgaa 60

aggagagctc tgctgggaga atcaaatgaa tttgttggag acaaggttgc gtatgccctg 120

tctcagggac taaaggtcat tgcatgtgtt ggtgagaccc ttgagcagag ggaggctggg 180

tctaccatgg atgttgttgc tgcacaaaca aaagcaattg ctgagaagat caaggactgg 240

agcaacgtag ttgttgccta tgaaccagtt tgggctattg gaa 283

<210> 21
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 21

ccttgagcag agggaggctg ggtctaccat ggatgttgtt gctgcacaaa caaaagcaat 60

tgctgagaag atcaaggact ggagcaacgt agttgttgcc tatgaaccag tttgggctat 120

tggaactggt aaagttgcca ccccagctca ggctcaggaa gtgcacgcct ccctgaggga 180

ttggctaaag accaatgcca gccctgaggt tgctgaatct actaggatca tctacggagg 240

ctctgtaact gctgcgaact gcaaagagct agcagcacag cctgatgtcg 290

<210> 22
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 22

cccacgcgtc cggaactgct gggtgaagaa gggaggtgct ttcactggtg aagtcagtgc 60

tgagatgctc gtcaaccttg gtgttccctg ggtcattctt ggacactctg aaaggagagc 120

tctgctggga gaatcaaatg aatttgttgg agacaaggtt gcgtatgccc tgtctcaggg 180

actaaaggtc attgcatgtg ttggtgagac ccttgagcag agggaggctg ggtctaccat 240

ggatgttgtt gctgcacaaa caaaagcaat tgctgagaag atcaaggact 290

<210> 23
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 23

cttggacact ctgaaaggag agctctgctg ggagaatcaa atgaatttgt tggagacaag 60

gttgcgtatg ccctgtctca gggactaaag gtcattgcat gtgttggtga gacccttgag 120

cagagggagg ctgggtctac catggatgtt gttgctgcac aaacaaaagc aattgctgag 180

aagatcaagg actggagcaa cgtagttgtt gcctatgaac cagtttgggc tattggaact 240

ggtaaagttg ccacccccagc tcaggctcag gaagtg 276

<210> 24
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 24

cccacgcgtc cgcatggatg ttgttgctgc acaaacaaaa gcaattgctg agaagatcaa 60

ggactggagc aacgtagttg ttgcctatga accagtttgg gctattggaa ctggtaaagt 120

tgccacccca gctcaggctc aggaagtgca cgcctccctg agggattggc taaagaccaa 180

tgccagccct gaggttgctg aatctactag gatcatctac ggaggctctg taactgctgc 240

gaactgcaaa gagctagcag cacagcctga tgtcgatggt ttcttgtcg gtggagcttc 300

tttgaagcct gagttc 316

<210> 25
<211> 313
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (302)
<223>

<400> 25

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gatcatctac ggaggctctg taactgctgc gaactgcaaa gagctagcag cacagcctga 120

tgtcgatggt tttcttgtcg gtggagcttc tttgaagcct gagttcatcg acatcatcaa 180

cgcggccacc gtgaagtccg cttaagatgc tacgctgaag acgaacatac tttttttttg 240

ctcaactgtg ctatgtaagc tagtagcttt tgcgcaggag cagagactgt tttgcctgcc 300

cnaacttcta gct 313

<210> 26
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 26

gctgctcaga actgctgggt gaagaaggga ggtgctttca ctggtgaagt cagtgctgag 60

atgctcgtca accttggtgt tccctgggtc attcttggac actctgaaag gagagctctg 120

ctgggagaat caaatgaatt tgttggagac aaggttgcgt atgccctgtc tcagggacta 180

aaggtcattg catgtgttgg tgagaccctt gagcagaggg aggctgggtc taccatggat 240

gttgttgctg cacaaacaaa agcaattgct gagaaga 277

<210> 27
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 27

agggactaaa ggtcattgca tgtgttggtg agacacttga gcagagggag gctgggtcta 60

ccatggaggt tgttgctgca caaacaaaag caattgctga gaagatcaag gactggagca 120

acgtattgtt gcctatgaac cagtttgggc tattggaact ggtaaagttg ccaccccagc 180

tcaggctcag gaagtgcacg cctccctgag ggattggcta aagaccaacg tcagccctga 240

ggttgctgaa tctactagga tcatttac 268

<210> 28
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 28

gagaatcaaa tgagtttgtt ggagacaagg ttgcttttgc tctgtctcag ggactaaagg 60

tcattgcatg tgttggtgag acccttgagg agagggaggc tggttcaacc atggatgttg 120

ttgctgcaca aacaaaagca attgctgaga agatcaagga ctggagcaac gttgttcttg 180

cctatgaacc agtctgggct attggaactg gcaaagtcgc caccccagct caggctcagg 240

aagtgcacgc ctccctgagg gattgggtaa agatcaatgt cagccctgag gtctctgaat 300

ctacaag 307

<210> 29
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 29

ggacactctg aaaggagagc tctgctggga gaatcaaatg aatttgttgg agacaaggtt 60

gcgtatgccc tgtctcaggg actaaaggtc attgcatgtg ttggtgagac ccttgagcag 120

agggaggctg ggtctaccat ggatgttgtt cgtgcacaaa caaaagcaat tgctgagaag 180

atcaaggact ggagcaacgt agttgttgcc tatgaaccag tttgggctat tggaactggt 240

aaagttgcca ccccagctca ggctcaggaa gtgcacgcct ccctg 285

<210> 30
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 30

aaaggtcatt gcatgtgttg gtgagaccct tgagcagagg gaggctgggt ctaccatgga 60

tgttgttgct gcacaaacaa aagcaattgc tgagaagatc aaggactgga gcaacgtagt 120

tgttgcctat gaaccagttt gggctattgg aactggtaaa gttgccaccc cagctcaggc 180

tcaggaagtg cacgcctccc tgagggattg gctaaagacc aatgccagcc ctgaggttgc 240

tgaatctact aggatcatct acggaggctc tgtaactgct gcgaactgca aagagctagc 300

agcacagcct gatgtcgatg gttttcttgt cggtgga 337

<210> 31
<211> 302
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (31)
<223>

<400> 31

cccacgcgtc cgcggacgcg tggggagtgg nctcaccgag atgggccgca agttcttcgt 60

cggtggcaac tggaaatgca atggaaccac agatcaggtc gagaagattg tcaaaacact 120

gaatgaagga caggttcccc cttcagatgt tgtggaggtc gttgtcagcc ctccttatgt 180

cttccttcct gtggtcaaga gccagctgcg ccaagagttc catgttgctg ctcagaactg 240

ctgggtgaag aagggaggtg ctttcactgg tgaagtcagt gctgagatgc tcgtcaacct 300

tg 302

<210> 32
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 32

gccagctgcg ccaagagttc catgttgctg ctcagaactg ctgggtgaag aagggaggtg 60

ctttcactgg tgaagtcagt gctgagatgc tcgtcaacct tggtgttccc tgggtcattc 120

ttggacactc tgaaaggaga gctctgctgg gagaatcaaa tgaatttgtt ggagacaagg 180

ttgcgtatgc cctgtctcag ggactaaagg tcattgcatg tgttggtgag acccttgagc 240

agagggaggc tgggtc 256

<210> 33
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 33

cccacgcgtc cggtgttggt gagacccttg agcagaggga ggctgggtct accatggatg 60

ttgttgctgc acaaacaaaa gcaattgctg agaagatcaa ggactggagc aacgtagttg 120

ttgcctatga accagtttgg gctattggaa ctggtaaagt tgccacccca gctcaggctc 180

aggaagtgca cgcctccctg agggattggc taaagaccaa tgccagccct gaggttgctg 240

aatctactag gatcatctac ggaggctc 268

<210> 34
<211> 254

<212> nucleic acid
<213> Zea mays

<400> 34

ccatgttgct gctcagaact gctgggtgaa gaagggaggt gctttcactg gtgaagtcag 60

tgctgagatg ctcgtcaacc ttggtgttcc ctgggtcatt cttggacact ctgaaaggag 120

agctctgctg ggagaatcaa atgaatttgt tggagacaag gttgcgtatg ccctgtctca 180

gggactaaag gtcattgcat gtgttggtga gacccttgag cagagggagg ctgggtctac 240

catggatgtt gttg 254

<210> 35
<211> 341
<212> nucleic acid
<213> Zea mays

<400> 35

cgccgtccga agctccgcac cccaatctaa tcgacacctc accgagatgg gccgcaagtt 60

cttcgtcggt ggcaactgga aatgcaatgg aaccacagat caggtcgaga agattgtcaa 120

aaccctgaat gaaggacagg ttcccccttc agatgttgtg gaggtcgttg tcagccctcc 180

ttatgtcttc cttcctgtgg tcaagagcca gctgcgccaa gagttccatg ttgctgctca 240

gaactgctgg gtgaagaagg gaggtgcttt cactggtgaa gtcagtgctg agatgctcgt 300

caaccttggt gttccctggg tcatcttgga cactctgaaa g 341

<210> 36
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 36

ttcggcacga gaaagagcta gcagcacagc ctgatgtcga tggttttctt gtcggtggag 60

cttctttgaa gcctgagttc atcgacatca tcaacgcggc caccgtgaag tccgcttaag 120

atgctacgct gaagacgaac atactttttt tttgctcaac tgtgctatgt aagctagtag 180

cttttgcgca ggagcagaga ctgttttgcc tgcccccaac ttctagcttg agcttgctaa 240

taatgtttac c 251

<210> 37
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 37

tggctattgg aactggtaaa gttgccaccc cagctcaggc tcaggaagtg cacgcctccc 60

tgagggattg gctaaagacc aatgccagcc ctgaggttgc tgaatctact aggatcatct 120

acggaggctc tgtaactgct gcgaactgca aagagctagc agcacagcct gatgtcgatg 180

gttttcttgt cggtggagct tctttgaagc ctgagttcat cgacatcatc aacgcggcca 240

ccgtga 246

<210> 38
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 38

ggtgaagtca gtgctgagat gctcgtcaac cttggtgttc cctgggtcat tcttggacac 60

tctgaaagga gagctctgct gggagaatca aatgaatttg ttggagacaa ggttgcgtat 120

gccctgtctc agggactaaa ggtcattgca tgtgttggtg agacccttga gcagagggag 180

gctgggtcta ccatggatgt tgttgctgca caaacaaaag caattgctga gaagatcagg 240

actggagcac gtattgttgc ctatgaacca 270

<210> 39
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 39

cgcagatcag gttgagaaga ttgtcaaaac cctgaatgaa ggaaatgttc cctcttcaga 60

tgttgttgag gttgttgtca gtcctcctta tgtgttcctc ccggtggtca agagccagct 120

gcgtcaagag ttccaagttg ctgctcagaa ctgctgggtg aagaagggag gtgcattcac 180

tggtgaaatt agtgctgaga tgctcgtcaa ccttggcgtt ccctgggtca ttcttggaca 240

ctctgaaagg agagctctgc tgggagaatc aaatgag 277

<210> 40
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 40

cccacgcgtc cggaactgct gggtgaagaa gggaggtgct ttcactggtg aagtcagtgc 60

tgagatgctc gtcaaccttg gtgttccctg ggtcattctt ggacactctg aaaggagagc 120

tctgctggga gaatcaaatg aatttgttgg agacaaggtt gcgtatgccc tgtctcaggg 180

actaaaggtc attgcatgtg ttggtgagac ccttgagcag agggaggctg ggtctaccat 240

ggatgttgtt gctgcacaaa c 261

<210> 41
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 41

tgaagggagg tgcattcacc ggtgaaatta gtgctgagat gctcgtcaac cttggcgttc 60

cctgggtcat tcttggacac tctgaaagga gagctctgct gggagaatca aatgagtttg 120

ttggagacaa ggttgctttt gctctgtctc agggactaaa ggtcattgca tgtgttggtg 180

agacccttga ggagagggag gctggttcaa ccatggatgt tgttgctgca caaacaaaag 240

caattgctga gaagatcaag gactggagca acgttg 276

<210> 42
<211> 326
<212> nucleic acid
<213> Zea mays

<400> 42

ccaatctaga agcacacctc tccctctctc tctcttcgcc gtccgaagct ccgcacccca 60

atctaatcga cacctcaccg agatgggccg caagttcgtc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcaatg ttgtggaggt cgttgtcagc cctccttatg tcttccttcc tgtggtcaag 240

agccagctgc gccaagagtt ccatgttgct gctcagaact gctgggtgaa gaagggatgt 300

gctttcactg gtgaagtcat gctgag 326

<210> 43
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 43

aactgcaaag agctagcagc acagcctgat gtcgatggtt ttcctgtcgg tggagcttct 60

ttgaagcctg agttcatcga catcatcaac gcggccaccg tgaagtccgc ttaagatgct 120

acgctgaaga cgaacatact tttttttgc tcaactgtgc tatgtaagct agtagctttt 180

gcgcaggagc agagactgtt ttgcctgccc ccaacttcta gcttgagctt gctaataatg 240

ttta 244

<210> 44
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 44

cccacgcgtc cgatgcaatg gaaccacaga tcaggtcgag aagattgtca aaaccctgaa 60

tgaaggacag gttcccccctt cagatgttgt cgaggtcgtt gtcagccctc cttatgtctt 120

ccttcctgtg gtcaagagcc agctgcgcca agagttccat gttgctgctc agaactgctg 180

ggtgaagaag ggaggtgctt tcactggtga agtcagtgct gagatgctcg tcaaccttgg 240

tgttccctgg gtcattct 258

<210> 45
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 45

gaagctccgc acccaatcta atcgacacct caccgagatg ggccgcaagt tcttcgtcgg 60

tggcaactgg aaatgcaatg gaaccacaga tcaggtcgag aagattgtca aaaccctgaa 120

tgaaggacag gttcccccctt acaatgttgt tgaggtcgtt gtcagccctc cttatgtctt 180

ccttcctgtg gtcaagagcc agctgcgcca agagttccat gttgctgctc agaactgctg 240

ggtgaagaag ggaggtgctt tcact 265

<210> 46
<211> 336
<212> nucleic acid
<213> Zea mays

<400> 46

aaggttgcgt atgccctgtc tcagggacta aaggtcattg catgtgttgg tgagaccctt 60

gagcagaggg aggctgggtc taccatggat gttgttgctg cacaaacaaa agcaattgct 120

gagaagatca aggactggag caacgtagtt gttgcctatg aaccagtttg ggctattgga 180

actggtaaag ttgccacccc agctcaggct caggaagtgc acgcctccct gagggattgg 240

ctaaagacca atgccagccc tgaggttgct gaatctacta ggatcatcta cggaggctct 300

gtaactgctg cgaactgcaa agagctagca gcacag 336

<210> 47
<211> 349
<212> nucleic acid
<213> Zea mays

<400> 47

ctctccctct ctctctcttc gccgtccgaa gctccgcacc ccaatctaat cgacacctca 60

ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa atgcaatgga accacagatc 120

aggtcgagaa gattgtcaaa accctgaatg aaggacaggt tccccсttca gatgttgtgg 180

aggtcgttgt cagccctcct tatgtcttcc ttcctgtggt caagagccag ctgcgccaag 240

agttccatgt tgctgctcag aactgctggg tgaagaaggg aggtgctttc actggtgaag 300

tcagtgctga gatgctcgtc aaccttggtg ttccctgggt cattcttgg 349

<210> 48
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 48

ccacgcgtcc gaatcgacac ccggccgaca tgggccgcaa gttcttcgtt ggtggcaact 60

ggaaacgcaa tggaaccgca gaccaggttg agaagatcgt caaaaccctg aatgaaggaa 120

atgctccctc ttcagacgtc gtcgaggttg ttgtcagtcc tcctcatgtg ttcctcccgg 180

tggtcaagag ccagctgcgc caagagttcc aagtcgctgc tcagaactgc tgggtgaaga 240

agggaggtgc attcactggt gaaaccagtg ctgagatgct cgtcaacctt ggcgtctccc 300

tgggtcactc ttggaca 317

<210> 49
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 49

ggaaatgcaa tggaaccgca gatcaggttg agaagattgt caaaaccctg aatgaaggaa 60

atgttccctc ttcagatgtt gttgaggttg ttgtcagtcc tccttatgtg ttcctcccgg 120

tggtcaagag ccagctgcgc caagagttcc aagttgctgc tcagaactgc tgggtgaaga 180

agggaggtgc attcactggt gaaattagtg ctgagatgct cgtcaacctt ggcgttccct 240

gggtcattct tggacactct gaa 263

<210> 50
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 50

ctttgaagcc tgagttcatc gacatcatca acgcggccac cgtgaagtcc gcttaagatg 60

ctacgctgaa gacgaacata cttttttttt gctcaactgt gctatgtaag ctagtagctt 120

ttgcgcagga gcagagactg ttttgcctgc ccccaacttc tagcttgagc ttgctaataa 180

tgtttacctc tggacgtatc aataatggtg cttatgtatc ccctttt 227

<210> 51
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 51

ccagtctggg ctattggaac tggcaaagtc gccaccccag ctcaggctca ggaagtgcac 60

gcctccctga gggattgggt aaagatcaat gtcagccctg aggtctctga atctacaagg 120

atcatctatg gaggttcagt aactgctgcg aactgcaaag agctggcagc acagcctgat 180

gtcgatggtt tccttgtggg cggtgcttct ttgaagcccg agttcatcga catcatcaac 240

gccgccaccg tgtgaagtcc gcttaagatg ttccaaccct tcaccctgtt gcggtgatgt 300

<210> 52
<211> 348
<212> nucleic acid
<213> Zea mays

<400> 52

ccgtactcaa tctaatcgac acccggccga gattggacgc aatttcttcg ttggtggcaa 60

ctggaaatgc aatggaaccg cagatcaggt tgagtagatt gtcaagacgc tgaatgaagg 120

aaatgttccc tcttcagatg ttgttgaggt tgtggtcagt cctccttatg tgttcctccc 180

ggtggtcaag agccagctgc tccaagagtt ctaagttgct gctcagaact gctgggtgaa 240

gaagggaggt gcattcactg gtgaaattag tgctgagatg ctcgtcaacc ttggcggtcc 300

ctgggtcatt cttggacact ctgaaaggag agctctgtct gggagaat 348

<210> 53
<211> 264
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (48),(61),(222),(224),(233),(236),(241),(255)
<223> unsure at all n locations

<400> 53

gtgagaccct tgagcagagg gaggctgggt ctaccatgga tgttgttnct gcacaaacaa 60

nagcaattgc tgagaagatc aaggactgga gcaacgtagt tgttgcctat gaaccagttt 120

gggctattgg aactggtaaa gttgccaccc cagctcaggc tcaggaagtg cacgcctccc 180

tgagggattg gctaaagacc aatgccagcc ctggggttgc tnantctata ggntcntcta 240

nggggcttta aaaantgctg ggaa 264

<210> 54
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 54

gttcttcgtc ggtggcaact ggaaatgcaa tggaaccaca gatcaggtcg agaagattgt 60

caaaaccctg aatgaaggac aggttccccc ttcagatgtt gtcgaggtcg ttgtcagccc 120

tccttatgtc ttccttcctg tggtcaagag ccagctgcgc caagagttcc atgttgctgc 180

tcagaactgc tgggtgaaga agggaggtgc tttcactggt gaagt 225

<210> 55
<211> 278
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (88)
<223>

<400> 55

cttggcgttc cctgggtcat tcttggacac tctgcaagga gagctctgct gggagtttcc 60

tgtgagtttg ttggagacaa ggtttgtntt gctctgtctc agggactaaa ggtcattgca 120

tgtgttggtg agacccttga gtttagggag gctggttcaa ccatggatgt tgttgctgca 180

caaacaaaag caattgctga gaagatcaag gactggagca acgttgttct tgcctatgaa 240

ccagtctggg ctattggaac tggcaaagtc gccaccca 278

<210> 56
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 56

gcccctcctc ctctccccca tccgtaccca atctaatcga caccccggccg agatgggccg 60

caagttcttc gttggtggca actggaaatg caatggaacc gcagatcagg ttgagaagat 120

tgtcaaaacc ctgaatgaag gaaatgttcc ctcttcagat gttgttgagg tcgttgtcag 180

tcctccttat gtgttcctcc cggtggtcaa gagccagctg cgccaagagt tccaagttgc 240

tgctcagaac tgctgggtga agaagggagg tgcattcact ggtgaaatta gtgctgaaat 300

gctcgtcaac cttggcg 317

<210> 57
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 57

ccgtacccaa tctaatcgac acccggccga gatgggccgc aagttcttcg ttggtggcaa 60

ctggaaatgc aatggaaccg cagatcaggt tgagaagatt gtcaaaaccc tgaatgaagg 120

aaatgttccc tcttcagatg ttgttgaggt cgttgtcagt cctccttatg tgttcctccc 180

ggtggtcaag agccagctgc gccaagagtt ccaagttgct gctcagaact gctgggtgaa 240

gaagggaggt gcattcactg gtgaaattag tgctgaaatg ctcgtcaacc t 291

<210> 58
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 58

acggaggctc tgtaactgcc gcgaactgca aagagctagc agcacagcct gatgtcgatg 60

ggtttcttgt cggtggagct tctttgaagc ctgagttcat cgacatcatc aacgcggcca 120

ccgtgaagtc cgcttaagat ggtacgcgtg agacgaacat acttttttt tgctcaactg 180

tgctatgtaa gctagtagct tttggcgcag gacagagact ttgtttacct cccccaactt 240

ttag 244

<210> 59
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 59

ccatccgtac ccaatctaat cgacacccgg ccgagatggg ccgcaagttc ttcgttggtg 60

gcaactggaa atgcaatgga accacagatc aggttgagaa gattgtcaaa accctgaatg 120

aaggaaatgt tcctcttcag atgttgttga ggtcgttgtc agtcctcctt atgtgttcct 180

cccggtggtc aagagccagc tgcgccaaga gttccaagtt gctgctcaga actgctgggt 240

gaagaaggga ggtg 254

<210> 60
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 60

tgctcgtcaa ccttggtgtt ccctgggtca ttcttggaca ctctgaaagg agagctctgc 60

tgggagaatc aaatgaattt gttggagaca aggttgcgta tgccctgtct cagggactaa 120

aggtcattgc atgtgttggt gagacccttg agcagaggga ggctgggtct accatggatg 180

ttgttgctgc acaaacaaaa gcaattgctg agaagatcaa gg 222

<210> 61
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 61

atcgacacct caccgagatg ggccgcaagt tcttcgtcgg tggcaactgg aaatgcaatg 60

gaaccacaga tcaggtcgag aagattgtca aaaccctgaa tgaaggacag gttccccctt 120

cagatgttgt ggaggtcgtt gtcagccctc cttatgtctt ccttcctgtg gtcaagagcc 180

agctgcgcca agagttccat gttgctgctc agaactgctg ggtgaagaag ggaggtgctt 240

tcactggtga agtcagtgct gag 263

<210> 62
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 62

gaagctccgc acccaatcta atcgacacct caccgagatg ggccgcaagt tcttcgtcgg 60

tggcaactgg aaatgcaatg gaaccacaga tcaggtcgag aagattgtca aaaccctgaa 120

tgaaggacag gttccccctt cagatgttgt tgaggtcgtt gtcagccctc ttatgtcttc 180

cttcctgtgg tcaagagcca gctgcgccaa gagttccatg ttgctgctca gaactgctgg 240

gtgaagaagg gaggtgcttt cactggtgaa gtcagtgctg agatgctcgt ca 292

<210> 63
<211> 312

<212> nucleic acid
<213> Zea mays

<400> 63

ctctccctct ctctctcttc gccgtccgaa gctccgcacc ccaatctaat cgacacctca 60

ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa atgcaatgga accacagatc 120

aggtcgagaa gattgtcaaa accctgaatg aaggacaggt tccccсttca gatgttgtgg 180

aggtcgttgt cagccctcct tatgtcttcc ttcctgtggt caagagccag ctgcgccaag 240

agttccatgt tgctgctcag aactgctggg tgaagaaggg aggtgctttc actggtgaag 300

tcagtgctga ga 312

<210> 64
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 64

atccaatcta gaagcacacc acaccctctc tctctcttcg ccgtccgaag caccgcacac 60

caatctaatc gacacatcac cgagatgggc cgcaagttca tcgtcggtag caacaggaaa 120

tgcaatggaa ccacagatca ggtcgagaag attgtcaaaa cactgaatga aggacaggtt 180

cccccatcag atgttgtgga ggacgttgtc agcccacctt atgtcttcct tcctgtggtc 240

aagagccagc agcgccaag 259

<210> 65
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 65

aagcgcccct cctcctctcc cccatccgta cccaatctaa tcgacacccg gccgagatgg 60

gccgcaagtt cttcgttggt ggcaactgga aatgcaatgg aaccgcagat caggttgaga 120

agattgtcaa aaccctgaat gaaggaaatg ttccctcttc agatgttgtt gaggttgttg 180

tcagtcctcc ttatgtgttc ctcccggtgg tcaagagcca gctgcgccaa gagttccaag 240

ttgctgctca gaactgctgg gtgaagaagg gaggtgcatt cactggtgaa attag 295

<210> 66
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 66

aaatccaatc tagaagcacc cctctccctc tctctctctt cgccgtccga agctccgcac 60

cccaatctaa tcgacacctc accgagatgg gccgcaagtt cttcgtcggt ggcaactgga 120

aatgcaatgg aaccacagat caggtcgaga agattgtcaa aaccctgaat gaaggacagg 180

ttcccccttc agatgttgtg gaggtcgttg tcagccctcc ttatgtcttc cttcctgtgg 240

tcaagagcca gctgcgccaa gagttccatg ttgctgctca gaactgctgg gtgaagaagg 300

gaggtgcttt cactggtgaa 320

<210> 67
<211> 207
<212> nucleic acid
<213> Zea mays

<400> 67

gcacgagctg gagcaacgta gttgctgcct atgaaccagt ttgggctatt ggaactggta 60

aagttgccac cccagctcag gctcaggaag tgcacgcctc cctgagggat tggctaaaga 120

ccaatgccag ccctgaggtt gctgaatcta ctaggatcat ctacggaggc tctgtaactg 180

ctgcgaactg caaagagcta gcagcac 207

<210> 68
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 68

aatcgacacc cggccgagat gggcgcaagt tcttcgttgg tggcaactgg aaatgcaatg 60

gaaccgcaga tcaggttgag aagattgtca aaaccctgaa tgaaggaaat gttccctctt 120

cagatgttgt tgaggttgtt gtcagtcctc cttatgtttt cctcccggtg gtcaagagcc 180

agctgcgcca agagttccaa gttgctgctc agaactgctg ggtgaagaag ggaggtgcat 240

tcactggtga aattagtgct gagat 265

<210> 69
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 69

cggacgcgtg ggtagaagca cccctctccc tctctctctc ttcgccgtcc gaagctccgc 60

accccaatct aatcgacacc tcaccgagat gggccgcaag ttactcgtcg gtggcaactg 120

gaaatgcaat ggaaccacag atcaggtcga gaagattgtc aaaaccctga atgaaggaca 180

ggttccccct tcagatgttg tggaggtcgt tgtcagccct ccttatgtct tccttcctgt 240

ggtcaagagc cagctgcgcc aagagttcca tgttgctgct cagaactgct gggtgaagaa 300

gggaggtgct ttcactggt 319

<210> 70
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 70

atccaatcta gaagctcccc tctccctccc tccctctctc tctctctctt cgccgtccga 60

agctccgcac ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg 120

gcaactggaa atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg 180

aaggacaggt tccccccttca gatgttgtcg aggtcgttgt cagccctcct tatgtcttcc 240

ttcctgtggt caagagccag ctgcgccaag agttccatgt tgctgctcag aactgctggg 300

tgaagaaggg aggtgc 316

<210> 71
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 71

ctctcttcgc cgtccgaagc tccgcaccca atctaatcga cacctcaccg agatgggccg 60

caagttcttc gtcggtggca actggaaatg caatggaacc acagatcagg tcgagaagat 120

tgtcaaaacc ctgaatgaag gacaggttcc cccttcagat gttgtcgagg tcgttgtcag 180

ccctccttat gtcttccttc ctgtggtcaa gagccagctg cgccaagagt tccatgttgc 240

tgctcagaac tgctgggtga agaagggagg tgcttt 276

<210> 72
<211> 204
<212> nucleic acid
<213> Zea mays

<400> 72

gaagatcaag gactggagca acgtattgtt gcctatgaac cagtttgggc tattggaact 60

ggtaaagttg ccacccccagc tcaggctcag gaagtgcacg cctccctgag ggattggcta 120

aagaccaatg ccagccctga ggttgctgaa tctactagga tcatctacgg aggctctgta 180

actgctgcga actgcaaaga gcta 204

<210> 73
<211> 342
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (91)
<223>

<400> 73

ctagaagccc cctctccctc cctccctctc tctctctctc ttcgccgtcc gaagctccgc 60

acccaatcta atccacacct cagccagatg ngccgcaagt tcttcgtcgg tggcaactgg 120

aaatgcaatg gaaccacaga tcaggtcgag aagattgtca gaaccctgaa tgaaggacag 180

gttccccctt cagatgttgt cgaggtcgtt gtcagccctc cttatgtctt ccttcctgtg 240

gtcaagagcc agctgcgcca agagttccat gttgctgctc agaactgctg ggtgaagaat 300

ggaggtgctt tcactggtga agcagtgctg agatgctcgt ca 342

<210> 74
<211> 313
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (308)
<223>

<400> 74

aatctagaag ctcccctctc cctccctccc tctctctctc tctcttcgcc gtccgaagct 60

ccgcacccaa tctaatcgac acctcaccga gatgggccgc aagttcttcg tcggtggcaa 120

ctggaaatgc aatggaacca cagatcaggt cgagaagatt gtcaaaaccc tgaatgaagg 180

acaggttccc ccttcagatg ttgtcgaggt cgttgtcagc cctccttatg tcttccttcc 240

tgtggtcaag agccagctgc gccaagagtt ccatgttgct gctcagaact gctgggtgaa 300

gaagggangt gct 313

<210> 75
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 75

atttagaagc gcccctcctc ctctccccca tccgtaccca atctaatcga cacccggccg 60

agatgggccg caagttcttc gttggtggca actggaaatg caatggaacc gcagatcagg 120

ttgagaagat tgtcaaaacc ctgaatgaag gaaatgttcc ctcttcagat gttgttgagg 180

ttgttgtcag tcctccttat gtgttcctcc cggtggtcaa gagccagctg cgccaagagt 240

tccaagttgc tgctcagaac tgctgggtga agaaggg 277

<210> 76
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 76

atttagaagc gcccctcctc ctctccccca tccgtaccca atctaatcga cacccggccg 60

agatgggccg caagttcttc gttggtggca actggaaatg caatggaacc gcagatcagg 120

ttgagaagat tgtcaaaacc ctgattgaag gaaatgttcc ctctacagat gttgttgagg 180

tcgttgtcag tcctccttat gtgttcctcc cggtggtcaa gagccagctg cgccaagagt 240

tccaagttgc tgctcagaac tgctgggtga agaagggagg tg 282

<210> 77
<211> 313

<212> nucleic acid
<213> Zea mays

<400> 77

acaatttaga agcgaccctc ctcctctccc ccatccgtac ccaatctaat cgacacccgg 60

ccgagatggg ccgcaagttc ttcgttggtg gcaactggaa atgcaatgga accgcagatc 120

aggttgagaa gattgtcaaa accctgaatg aaggaaatgt tccctcttca gatgttgttg 180

aggttgttgt cagtcctcct tatgtgttcc tcccggtggt caagagccag ctgcgccaag 240

agttccaagt tgctgctcag aactgctggg tgaagaaggg aggtgcatta cactggtgaa 300

attagtgctg aga 313

<210> 78
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 78

ccaatctaga agctcccctc ttcgtccctc cctctctctc tctctcttcg ccgtccgaag 60

ctccgcaccc aatctaatcg acacctcacc gagatgggcc gcaagttctt cgtcggtggc 120

aactggaaat gcaatggaac cacagatcag gtcgagaaga ttgtcaaaac cctgaatgaa 180

ggacaggttc ccccttcaga tgttgtcgag gtcgttgtca gccctcctta tgtcttcctt 240

cctgtggtca agagccagct gcgccaagag ttccatgttg ctgctcagaa ctgctgggtg 300

aagaagg 307

<210> 79
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 79

aatccaatct agaagcaccc ctctccctct ctctctcttc gccgtccgaa gctccgcacc 60

ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa 120

atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg aaggacaggt 180

tccccccttca gatgttgtgg aggtcgttgt cagccctcct tatgtcttcc ttcctgtggt 240

caagagccag ctgcgccaag agttccatgt tgctgctcag aactgctggg tgaagaagg 299

<210> 80
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 80

agcgcccctc ctcctctcct ccatccgtac ccaatctaat cgacacccgg ccgagatggg 60

ccgcaagttc ttcgttggtg gcaactggaa atgcaatgga accgcagatc aggttgagaa 120

gattgtcaaa accctgaatg aaggaaatgt tccctcttca gatgttgttg aggttgttgt 180

cagtcctcct tatgtgttcc tcccggtggt caagagccag ctgcgccaag agttccaagt 240

tgctgctcag aactgctggg tgaaga 266

<210> 81
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 81

cttccttcct ctgcaagaag ccaaatacaa tttagaagcg cccctcctcc tctcccccat 60

ccgtacccaa tctaatcgac acccggccga gatgggccgc aagttcttcg ttggtggcaa 120

ctggaaatgc aatggaaccg cagatcaggt tgagaagatt gtcaaaaccc tgaatgaagg 180

aaatgttccc tcttcagatg ttgttgaggt cgttgtcagt cctccttatg tgttcctccc 240

ggtggtcaag agccagctgc gccaagagtt ccaagttgct gctcagaact gctgggtgaa 300

gaagggaggt gcattcac 318

<210> 82
<211> 182
<212> nucleic acid
<213> Zea mays

<400> 82

actctctctc tcttcgccgt ccgaagctcc gcacccaatc taatcgacac ctcaccgaga 60

tgggccgcaa gttcttcgtc ggtggcaact ggaaatgcaa tggaaccaca gatcaggtcg 120

agaagattgt caaaaccctg aatgaaggac aggttccccc ttcagatgtt gtacaggtcg 180

tt 182

<210> 83
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 83

ccgtacccaa tctaatcgac acccggccga gataagccgc aagttcttcg ttggtggcaa 60

ctggaaatgc aatggaaccg cagatcaggt tgagaagatt gtcaaaaccc tgaatgaagg 120

aaatgttccc tcttcagatg ttgttgaggt cgttgtcagt cctccttatg tgttcctccc 180

ggtggtcaag agccagctgc gccaagagtt ccaagttgct gctcagaact gctgggtgaa 240

gaagggaggt gcatcactgg tgaaattatg ctgaatgctc gtcaac 286

<210> 84
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 84

ctatctagaa gctcccctct ccctccctcc ctctctctct ctctcttcgc cgtccgaagc 60

tccgcaccca atctaatcga cacctcaccg agatgggccg caagttcttc gtcggtggca 120

actggaaatg caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag 180

gacaggttcc cccttcagat gttgtcgagg tcgttgtcag ccctccttat gtcttccttc 240

ctgtggtcaa gagccagctg cgccaagagt tccatgttgc tgctcagaac tg 292

<210> 85
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 85

aatctagaag cacccctctc cctctctctc tcttcgccgt ccgaagctcc gcaccccaat 60

ctaatcgaca cctcaccgag atgggccgca agttcttcgt cggtggcaac tggaaatgca 120

atggaaccac agatcaggtc gagaagattg tcaaaaccct gaatgaagga caggttcccc 180

cttcagatgt tgtggaggtc gttgtcagcc ctccttatgt cttccttcct gtggtcaaga 240

gccagctgcg ccaagagttc catgttgctg ctcagaa 277

<210> 86
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 86

gctcccctct ccctccctcc ctctctctct ctctcttcgc cgtccgaagc tccgcaccca 60

atctaatcga cacctcaccg agatgggccg caagttcttc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcagat gttgttgagg tcgttgtcag ccctccttat gtcttccttc ctgtggtcaa 240

gagccagctg cgccaagagt tccatgttgc tgctcagaac tgctgggtga agaaggga 298

<210> 87
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 87

atttagaagc gcccctcctc ctctccccca tccgtaccca atctaatcga cacccggccg 60

agatgggccg caagttcttc gttggtggca actggaaatg caatggaacc gcagatcagg 120

ttgagaagat tgtcaaaacc ctgaatgaag gaaatgttcc ctcttcagat gttgttgagg 180

ttgttgtcag tcctccttat gtgttcctcc cggtggtcaa gagccagctg cgccaagagt 240

tccaagttgc tgctcagaac tgctgggtga ag 272

<210> 88
<211> 301
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (137)
<223>

<400> 88

cacacgcgtc cgaactagaa gcacccctct acctccctcc ctctctctct ctctcttcgc 60

agtccgaagc tccgcaccca atctaatcga cacctcaccg agatgggccg caagtacttc 120

gtcggtggca actgganatg caatggaacc acagatcagg tcgagaagat tgtcaaaacc 180

ctgaatgaag gacaggttcc cccttcagat gttgtcgagg tcgttgtcag cactccttat 240

gtcttccttc ctgtggtcaa gagccagctg cgccaagagt tccatgttgc tgctcagaac 300

t 301

<210> 89
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 89

cggacggtgg gcagcgaaat ccaatctaga agctcccctc tccctccctc cctctctctc 60

tctctcttcg ccgtccgaag ctccgcaccc aatctaatcg acacctcacc gagatgggcc 120

gcaagttctt cgtcggtggc aactggaaat gcaatggaac cacagatcag gtcgagaaga 180

ttgtcaaaac cctgaatgaa ggacaggttc ccccttcaga tgttgtcgag gtcgttgtca 240

gccctcctta tgtcttcctt cctgtggtca agagccagct gcgccaagag ttccatgttg 300

ctgctca 307

<210> 90
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 90

atccaatcta gaagctcccc tctccctccc tccctctctc tctctctctt cgccgtccga 60

agctccgcac ccaatctaat cgacacatca ccgagatggg ccgcaagttc ttcgtcggtg 120

gcaactggaa atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg 180

aaggacaggt tccccccttca gatgttgtcg aggtcgttgt cagccctcct tatgtcttcc 240

ttcctgtggt caagagccag ctgcgccaag agttccatgt tgctgctcag aactgctggg 300

tgaagaaggg 310

<210> 91
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 91

caatttagaa gcgcccctcc tcctctcccc catccgtacc caatctaatc gacacccggc 60

cgagatgggc cgcaagttct tcgttggtgg caactggaaa tgcaatggaa ccgcagatca 120

ggttgagaag attgtcaaaa ccctgaatga aggaaatgtt ccctcttcag atgttgttga 180

cgttgttgtc agtcctcctt atgtgttcct cccggtggtc aagagccagc tgcgccaaga 240

gttccaagtt gctgctca 258

<210> 92
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 92

atctagaagc acccctctcc ctctctctct cttcgccgtc cgaagctccg caccccaatc 60

taatcgacac ctcaccgaga tgggccgcaa gttcttcgtc ggtggcaact ggaaatgcaa 120

tggaaccaca gatcaggtcg agaagattgt caaaaccctg aatgaaggac aggttccccc 180

ttcagatgtt gtggaggtcg ttgtcagccc tccttatgtc ttccttcctg tggtcaagag 240

ccagctgcgc caagagttcc atgttgctgc tcagaactgc tgggtgaaga aggg 294

<210> 93
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 93

ctcccctctc cctccctccc tctctctctc tctcttcgcc gaccgaagct ccgcacccaa 60

tctaatcgac acctcaccga gatgggccgc aagttcttcg tcggtggcaa ctggaaatgc 120

aatggaacca cagatcaggt cgagaagatt gtcaaaaccc tgaatgaagg acaggttccc 180

ccttcagatg ttgtcgaggt cgttgtcagc cctccttatg tcttccttcc tgtggtcaag 240

agccagctgc gccaagagtt ccatgttgct g 271

<210> 94
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 94

acggccgaga tgggccgcaa gttctgcgtt ggtggcaact ggagatgcaa tggaaccgca 60

gatcaggttg agaagattgt caaaaccctg aatgaaggaa atgttccctc ttcagatgtt 120

gttgaggttg ttgtcagtcc tccttatgtg ttcctcccgg tggtcaagag ccagctgcgc 180

caagagttcc aagttgctgc tcagaactgc tgggtgaaga agggatgtgc attcactggt 240

gaaattagtg ctgagatgct cgtcaacctt ggcg 274

<210> 95
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 95

ccaatctaga agctcccctc tccctccctc cctctctctc tctctcttcg ccgtccgaag 60

ctccgcaccc aatctaatcg acacctcacc gagatgggcc gcaagttctt cgtcggtggc 120

aactggaaat gcaatggaac cacagatcag gtcgagaaga ttgtcaaaac cctgaatgaa 180

ggacaggttc ccccttcaga tgttgtcgag gtcgttgtca gccctcctta tgtcttcctt 240

cctgtggtca agagccagct gcgccaagag ttccatgttg ctgctcagaa ctgctgggtg 300

aagaag 306

<210> 96
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 96

ctctccctct ctctctcttc gccgtccgaa gctccgcacc ccaatctaat cgacacctca 60

ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa atgcaatgga accacagatc 120

aggtcgagaa gattgtcaaa accctgaatg aaggacaggt tcccccttca gatgttgtgg 180

aggtcgttgt cagccctcct tatgtcttcc ttcctgtggt caagagccag ctgcgccaag 240

agttccatgt tgctgctcag aactgctggg tgaagaaggg 280

<210> 97
<211> 280
<212> nucleic acid

<213> Zea mays

<400> 97

tctagaagcg cccctctccc tctctctctc tctcttcgcc gtccgaagct ccgcacccca 60

atctaatcga cacctcgccg agatgggccg caagttcttc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcagat gttgtggagg tcgttgtcag ccctccttat gtcttccttc ctgtggtcaa 240

gagccagctg cgccaagagt tccatgttgc ggctcagaac 280

<210> 98
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 98

atccaatcta gaagcgcccc tctccctctc tctctctctc ttcgccgtcc gaagctccgc 60

accccaatct aatcgacacc tcgccgagat gggccgcaag ttcttcgtcg gtggcaactg 120

gaaatgcaat ggaaccacag atcaggtcga gaagattgtc aaaaccctga atgaaggaca 180

ggttcccccct tcagatgttg tggaggtcgt tgtcagccct ccttatgtct tccttcctgt 240

ggtcaagagc cagctgcgcc aagagttcca tgttgc 276

<210> 99
<211> 300
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (174)
<223>

<400> 99

gcgaaatcca atctagaagc tcccctctcc ctccctccct ctctctctct ctcttcgccg 60

tccgaagctc cgcacccaat ctaatcgaca cctcaccgag atgggccgca agttcttcgt 120

cggtggcaac tggaaatgca atggaaccac agatcaggtc gagaagattg tcanaaccct 180

gaatgaagga caggttcccc cttcagatgt tgtcgaggtc gttgtcagcc ctccttatgt 240

cttccttcct gtggtcaaga gccagctgcg ccaagagttc catgttgctg ctcagaactg 300

<210> 100
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 100

gatcaatgtc agccctgagg tctctgaatc tacaaggatc atctatggag gttcagtaac 60

tgctgcgaac tgcaaagagc tggcagcaca gcctgatgtc gatggtttcc ttgtgggcgg 120

tgcttctttg aagcccgagt tcatcgacat catcaacgcc gccgccgtgt gaagtccgct 180

gaagatgttc caacccttca ccctgttgcg gtgatgtgct gaagacagat cagactattt 240

ttttgtttaa ccgtgcagtg ctatgtaagc tactaacttt gcgctggtgc ggatgctgat 300

ttccctcccc ctagct 316

<210> 101
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 101

agatcaatgt cagccctgag gtctctgaat ctacaaggat catttatgga ggttcagtaa 60

ctgctgcgaa ctgcaaagag ctggcagcac agcctgatgt cgatggtttc cttgtgggcg 120

gtgcttcttt gaagcccgag ttcatcgaca tcatcaacgc cgccgccgtg tgaaatccgc 180

ttaagatgtt ccaacccttc accctgttgc ggtgatgtgc tgaagacaga tcagactatt 240

tttttgttta accgtgccgt gctatgtaag ctactaactt tgcgctggtg cggatgctga 300

tttccctccc ccctagcttt ttgtg 325

<210> 102
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 102

caatctagaa gcacccctct ccctctctct ctcttcgccg tccgaagctc cgcaccccaa 60

tctaatcgac acctcaccga gatgggccgc aagttcttcg tcggtggcaa ctggaaatgc 120

aatggaacca cagatcaggt cgagaagatt gtcaaaaccc tgaatgaagg acaggttccc 180

ccttcagatg ttgtggaggt cgttgtcagc cctccttatg tcttccttcc tgtggtcaag 240

agccagctgc gccaagagtt ccatgttgct gcc 273

<210> 103
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 103

gcgatctaga agcacccctc tccctctctc tctcttcgcc gtccgaagct ccgcacccca 60

atctaatcga cacctcaccg agatgggccg caagttcttc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcagat gttgtggagg tcgttgtcag ccctccttat gtcttccttc ctgtggtcaa 240

gagccagctg cgccaagagt tccatgttgc tgctcagaac t 281

<210> 104
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 104

ccaatctaga agctcccctc tccctccctc cctctctctc tctctcttcg ccgtccgaag 60

ctccgcaccc aatctaatcg acacctcacc gagatgggcc gcaagttctt cgtcggtggc 120

aactggaaat gcaatggaac cacagatcag gtcgagaaga ttgcctaaac cctgaatgaa 180

ggacaggttc ccccttcaga tgttgttgag gtcgttgtca gccctcctta tgtcttcctt 240

cctgtggtca agagccagct gcgccaagag ttccatgttc tgctcagaac tgctggg 297

<210> 105
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 105

atttagaagc gcccctcctc ctctccccca tccgtaccca atctaatcga cacccggccg 60

agatgggccg caagttcttc gttggtggca actggaaatg caatggaacc gcagatcagg 120

ttgagaagat tgtcaaaacc ctgaatgaag gaaatgttcc ctcttcagat gttgttgagg 180

ttgttgtcag tcctccttat gtgttcctcc cggtggtcaa gagctagctg cgccaagagt 240

tccagttgct gctcagaact gctgggtgag aagggagt 278

<210> 106
<211> 216
<212> nucleic acid
<213> Zea mays

<400> 106

gcgaaatcca atctagaagc acacctctcc ctctctctct cttcgccgtc cgaagctccg 60

cacccccaatc taatcgacac ctcaccgaga tgggccgcaa gttcttcgtc ggtggcaact 120

ggaaatgcaa tggaaccaca gatcaggtcg ataagattgt caaaaccctg aatgaaggac 180

aggttccccc ttcagatgtt gtggaggtcg ttgtca 216

<210> 107
<211> 188
<212> nucleic acid
<213> Zea mays

<400> 107

gagaagtagt gtaggctatg aaccagtttg ggctattgga actggtaaag ttgccacccc 60

agctcaggct caggaagtgc acgcctccct gagggattgg ctaagaccca acgtcagccc 120

tgaggttgct gaatctacta ggatcattta cggaggctct gtaactgccg cgaactgcaa 180

agagctag 188

<210> 108
<211> 204
<212> nucleic acid
<213> Zea mays

<400> 108

cggctcgagt ctagaagcgc ccctctccct ctctctctct ctcttcgccg tccgaagctc 60

cgcaccccaa tctaatcgac acctcgccga gatgggccgc aagttcttcg tcggtggcaa 120

ctggaaatgc aatggaacca cagatcaggt cgagaagatt gtcaaaaccc tgaatgaagg 180

acaggttccc ccttcagatg ttgt 204

<210> 109
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 109

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accccaatct aatcgacacc tcgccgagat gggccgcaag ttcttcgtcg gtggcaactg 120

gaaatgcaat ggaaccacag atcaggtcga gaagattgtc aaaaccctga atgaaggaca 180

ggttccccct tcagatgttg tggaggtcgt tgtcagccct ccttatgtct tccttcctgt 240

ggtcaagagc cagctgcgcc aagagttcca tgttgcgg 278

<210> 110
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 110

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taatcgacac ctcaccgaga tgggccgcaa gttcttcgtc ggtggcaact ggaaatgcaa 120

tggaaccaca gatcaggtcg agaagattgt caaaaccctg aatgaaggac aggttccccc 180

ttcagatgtt gtggaggtcg ttgtcagccc tccttatgtc ttccttcctg tggtcaagag 240

ccagctgcgc caagagttcc atgtt 265

<210> 111
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 111

ctaatctaga agctcccctc tccctccctc cctctctctc tctctcttcg ccgtccgaag 60

ctccgcaccc aatctaatcg acacctcacc gagatgggcc gcaagttctt cgtcggtggc 120

aactggaaat gcaatggaac cacagatcag gtcgagaaga ttgtcaaaac cctgaatgaa 180

ggacaggttc cccccttcaga tgttgtcgag gtcgttgtca gccctcctta tgtcttcctt 240

cctgtggtca agagccagct gcgccaagag 270

<210> 112
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 112

ccaatctaga agcacccctc tccctctctc tctcttcgcc gtccgaagct ccgcacccca 60

atctaatcga cacctcaccg agatgggccg caagttcttc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcagat gttgtggagg tcgttgtcag ccctccttat gtcttccttc ctgtggtcaa 240

gagccagctg cgccaagag 259

<210> 113
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 113

atccaatcta gaagcacccc tctccctctc tctctcttcg ccgtccgaag ctccgcaccc 60

caatctaatc gacacctcac cgagatgggc cgcaagttct tcgtcggtgg caactggaaa 120

tgcaatggaa ccacagatca ggtcgagaag attgtcaaaa ccctgaatga aggacaggtt 180

ccccccttcag atgttgtgga ggtcgttgtc agccctcctt atgtcttcct tcctgtggtc 240

aagagccagc tgcgccaaga gttccatgtt gctgctcaga actgctgggt gaag 294

<210> 114
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 114

atacaattta gaagcgcccc tcctcctctc ccccatccgt acccaatcta atcgacaccc 60

ggccgagatg ggccgcaagt tcttcgttgg tggcaactgg aaatgcaatg gaaccgcaga 120

tcaggttgag aagattgtca aaaccctgaa tgaaggaaat gttccctctt cagatgttgt 180

tgaggttgtt gtcagtcctc cttatgtgtt cctcccggtg gtcaagagcc agctgcg 237

<210> 115
<211> 203

<212> nucleic acid
<213> Zea mays

<400> 115

ccaatctaga agcacccctc tccctctctc tctcttcgcc gtccgaagct ccgcacccca 60

atctaatcga cacctcaccg agatgggccg caagttcttc gtcggtggca actggaaatg 120

caatggaacc acagatcagg tcgagaagat tgtcaaaacc ctgaatgaag gacaggttcc 180

cccttcagat gttgtggagg tcg 203

<210> 116
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 116

aatctagaag cgcccctctc cctctctctc tctctcttcg ccgtccgaag ctccgcaccc 60

caatctaatc gacacctcgc cgagatgggc cgcaagttct tcgtcggtgg caactggaaa 120

tgcaatggaa ccacagatca ggtcgagaag attgtcaaaa ccctgaatga aggacaggtt 180

ccccccttcag atgttgtgga ggtcgttgtc agccctcctt atgtcttcct tcctgtggtc 240

aagagccagc tgcgc 255

<210> 117
<211> 209
<212> nucleic acid
<213> Zea mays

<400> 117

tcgccgtccg aagctccgca ccccaatcta atcgacacct caccgagatg ggccgcaagt 60

tcttcgtcgg tggcaactgg aaatgcaatg gaaccacaga tcaggtcgag aagattgtca 120

aaaccctgaa tgaaggacag gttccccctt cagatgttgt ggaggtcgtt gtcagccctc 180

cttatgtctt ccttcctgtg gtcaagagc 209

<210> 118
<211> 216
<212> nucleic acid
<213> Zea mays

<400> 118

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gcaagttctt cgtcggtggc aactggaaat gcaatggaac cacagatcag gtcgagaaga 120

ttgtcaaaac cctgaatgaa ggacaggttc cccсttcaga tgttgtggag gtcgttgtca 180

gccctcctta tgtcttcctt cctgtggtca agagcc 216

<210> 119
<211> 160
<212> nucleic acid
<213> Zea mays

<400> 119

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tttgggctat tggaactggt aaagttgcca ccccagctca ggctcaggaa gtgcacgcct 120

ccctgaggga ttggctaaag accaatgcca gccctgaggt 160

<210> 120
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 120

gtatttagaa gcgcccctcc tcctctcccc catccgtacc caatctaatc gacacccggc 60

cgagatgggc cgcaagttct tcgttggtgg caactggaaa tgcaatggaa ccgcagatca 120

ggttgagaag attgtcaaaa ccctgaatga aggaaatgtt ccctcttcag atgttgttga 180

ggtcgttgtc agtcctcctt atgtgttcct cccggtggtc aagagccagc tgcgccaaga 240

gttccaagtt gctgctcaga actgctgggt gaagaaggga ggtgcattca ctggtg 296

<210> 121
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 121

caatctagaa gcacccctct ccctctctct ctcttcgccg tccgaagctc cgcaccccaa 60

tctaatcgac acctcaccga gatgggccgc aagttcttcg tcggtggcaa ctggaaatgc 120

aatggaacca cagatcaggt cgagaagatt gtcaaaaccc tgaatgaagg acaggttccc 180

ccttcagatg ttgtggaggt cgttgtcagc cctccttatg tcttccttcc tgtggtca 238

<210> 122
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 122

catcaaatga atttgttgga gacaagactg cgtatgccct gtctcaggga ctaaaggtca 60

ttgcatgtgt tggtgagacc cttgagcaga gtgaggctgg gtctaccatg gatgttgttg 120

ctgcacaaac aaaagcaatt gctgagaaga tcaaggactg gagcaacgta gttgttgcct 180

atgaaccagt ttgggctatt ggaactggta aagttgccac cccagctcag ctcaggaagt 240

gcacgcctac ctgagggatt ggctaaagac caatgccagc cctgaggatg ctgaatctac 300

tag 303

<210> 123
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 123

caatttagaa gcgcccctcc tcctctcccc catccgtacc caatctaatc gacacccggc 60

cgagatgggc cgcaagttct tcgttggtgg caactggaaa tgcaatggaa ccgcagatca 120

ggttgagaag attgtcaaaa ccctgaatga cggaaatgtt ccctcttcag atgttgttga 180

ggtcgttgtc agtcctcctt atgtgttcct cccggtgggc aagagccagt gcgccaagag 240

tt 242

<210> 124
<211> 327
<212> nucleic acid
<213> Zea mays

<400> 124

cacaaacctc accccaccta tattatcccg tgccccttgt ctttcttcct ccacaagcag 60

cgaaatccaa tctagaagct cccctctccc tccctccctc tctctctctc tcttcgccgt 120

ccgaagctcc gcacccaatc taatcgacac ctcaccgaga tgggccgcaa gttcttcgtc 180

ggtggcaact ggaaatgcaa tggaaccaca gatcaggtcg agaagattgt caaaaccctg 240

aatgaaggac aggttccccc ttcagatgtt gtcgaggtcg ttgtcagccc tccttatgtc 300

ttccttcctg tggtcaagag ccagctg 327

<210> 125
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 125

catccaatct agaagcaccc ctctccctct ctctctcttc gccgtccgaa gctccgcacc 60

ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa 120

atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg aaggacaggt 180

tccccccttca gatgttgtgg aggtcgttgt cagccctcct tatgtattcc ttcctgtggt 240

caagagccag ctgcgccaag agttccatgt tgctgctcag aactgctggg tgaagaa 297

<210> 126
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 126

ctaaagacca atgccatccc tgaggctgct gaatctgcta ggatcatcta cggaggctct 60

gtaactgctg cgaactgcaa agagctagca gtacagcctg acgtcgatgg ttgtcttgcc 120

gactgagctt ctttgaagcc tgagttcatc gacatcatca acgcggccac cgtgaagtcc 180

gcttaagatg ctacgctgaa gactgaacat acttcttttt gctcaactgt gctatgtaag 240

ctagtagctt ttg 253

<210> 127
<211> 171
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (8)
<223>

<400> 127

gaagctcncc tctccctccc tccctctctc tctctctctt cgccgtccga agctccgcac 60

ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa 120

atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgatta a 171

<210> 128
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 128

gaagctcccc tctccctccc tccctctctc tctctctctt cgccgtccga agctccgcac 60

ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa 120

atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg aaggacaggt 180

tccccccttca gatgttgtcg aggtcgttgt cagccctcct aatgtcttcc ttcctgtggt 240

caagag 246

<210> 129
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 129

cctccacaag cagcgaaatc caatctagaa gcacccctct ccctctctct ctcttcgccg 60

tccgaagctc cgcaccccaa tctaatcgac acctcaccga gatgggccgc aagttcttcg 120

tcggtggcaa ctggaaatgc aatggaacca cagatcaggt cgagaagatt gtcaaaaccc 180

tgaatgaagg acaggttccc ccttcagatg ttgtggaggt cgttgtcagc cctccttatg 240

<210> 130
<211> 212
<212> nucleic acid
<213> Zea mays

<400> 130

atccaatcta gaagctcccc tctccctccc tccctctctc tctctctctt cgccgtccga 60

agctccgcac ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg 120

gcaactggaa atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg 180

aaggacaggt tcccccttca gatgttgtcg ag 212

<210> 131
<211> 151
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (45)
<223>

<400> 131

cagcagctgc gccaagagtt ccatgttgct gctcagaact gctgngtgaa gaagggaggt 60

gctttcactg gtgaagtcag tgctgagatg ctcgtcaacc ttggtgttcc ctgggtcatt 120

cttggacact ctgaaaggag agctctgctg g 151

<210> 132
<211> 279
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (215),(225),(235),(245)
<223> unsure at all n locations

<400> 132

ccaatctaga agctcccctc tccctccctc cctctctctc tctctcttcg ccgtccgaag 60

ctccgcaccc aatctaatcg acacctcacc gagatgggcc gcaagttctt cgtcggtggc 120

aactggaaat gcaatggaac cacagatcag gtcgagaaga ttggcaaaac cctgaacgaa 180

ggacagggtc ccccgtcaga agtcgtcgag ggcgntggca gcccnccccta aggcnttcct 240

cccgnggaca agagccagca tcgccaagag ttccatgtt 279

<210> 133
<211> 128
<212> nucleic acid
<213> Zea mays

<400> 133

aatctagaag caccccctctc cctctctctc tcttcgccgt ccgaagctcc gcaccccaat 60

ctaatcgaca cctcaccgag atgggccgca agttcttcgt cggtggcaac tggaaatgca 120

atggaacc 128

<210> 134
<211> 150
<212> nucleic acid
<213> Zea mays

<400> 134

cagcgaaatc caatctagaa gcacccctct ccctctctct ctcttcgccg tccgaagctc 60

cgcacccaat ctaatcgaca cctcaccgag atgggccgca agttcttcgt cggtggcaac 120

tggaaatgca atggaaccac agatcaggtc 150

<210> 135
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 135

ggaactcggg gaggtgagca gaggtggtgg tgagtccgcc tttcgttttt ctgcagcagg 60

tcaaggggct gctgcggctg gacttcgccg tcgcagcgca gaactgctgg gtgcgcaagg 120

gcggcgcctt caccggcgag atcagtgctg agatgctggt aaacctgcag gtgcctgggt 180

cattttggga cattctgagc gcagagctct gttgggtgaa tccagtgatt ttgttgctga 240

taaagttgca tatgcactca ctcaaggtct caaggtaatt gcttgcattg gtgagaccct 300

tgagcagaga gaggcaggaa caa 323

<210> 136
<211> 214
<212> nucleic acid
<213> Zea mays

<400> 136

gtggtgagtc cgcctttcgt ttttctgcag caggtcaagg ggctgctgcg gctggacttc 60

gccgtcgcag cgcagaactg ctgggtgcgc aagggcggcg ccttcaccgg cgagatcagt 120

gctgagatgc tggtaaacct gcaggtgccc tgggtcattt tgggacattc tgagcgcaga 180

gctctgttgg gtgaatccag tgattttgtt gctg 214

<210> 137
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 137

cacgaattca ccaaccaaac tccactgtct ccaactctcc atcgcgtctg ctacgcctct 60

cctgcaggac gaccaatggc ttccaggaag ttcttcgtgg gtggcaactg gaaatgcaac 120

ggtactggcg aggacgtgaa gaagatcgtc accgtgctca acgaagccga ggtgccctct 180

gaagacgtcg tcgaggtggt ggtgagtccg ccgttcgttt ttctgcagca ggtcaagggg 240

ctgctgcggc tggacttcgc cgtcgca 267

<210> 138
<211> 191
<212> nucleic acid
<213> Zea mays

<400> 138

ggaactcggg gaggtgagca gaggtggtgg tgagtccgcc tttcgttttt ctgcagcagg 60

tcaaggggct gctgcggctg gacttcgccg tcgcagcgca gaactgctgg gtgcgcaagg 120

gcggcgcctt caccggcgag atcagtgctg agatgctggt aaacctgcag gtgccctgag 180

tcattttggg a 191

<210> 139
<211> 322
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (9),(77),(104),(186),(222)...(223),(273),(286)
<223> unsure at all n locations

<400> 139

tcacaacana ctccactgtc tccaactctc catcgcgtct gctacgcctc tcctgcatga 60

cgaccaatgg cttccangaa gttcttcgtg ggtggcaact gganatgcaa cggtactggc 120

gaggacgtga agaagatcgt caccgtgctc aacgaagccg aggtgccctc tgaagacgtc 180

gtcgangtgg tggtgagtcc gccgttcgtt tttctgcagc anngtcaagg gctgctgcgg 240

ctagacttcg ccgtcgcagc gcagaactgc tgngtgcgca agggcngcgc cttcaccggc 300

gagatcagtg ctgagatgct gg 322

<210> 140
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 140

caccaaccaa actccactgt ctccaactct ccatcgcgtc tgctacgcct ctcctgcagg 60

acgaccaatg gcttccagga agttcttcgt gggtggcaac tggaaatgca acggtactgg 120

cgaggacgtg aagaagatcg tcaccgtgct caaccaagcc gaggtgccct ctgaagacgt 180

cgtcgaggtg gtggtgagtc cgcctttcgt ttttctgcag caggtcaagg ggctgctgcg 240

<210> 141
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 141

accaaactcc actgtctcca actctccatc gcgtctgcta cgcctctcct gcaggacgac 60

caatggcttc caggaagttc ctcgtgggtg gcaactggaa atgcaacggt actggcgagg 120

acgtgaagaa gatcgtcacc gtgctcaacc aagccgaggt gccctctgaa gacgtcgtcg 180

aggtggtggt gagtccgcct ttcgtttttc tgcagcaggt caaagggctg ctgcggctgg 240

acttcgccgt cgcagcgcag aactgctggg tgcgcaagga ggcg 284

<210> 142
<211> 166
<212> nucleic acid
<213> Zea mays

<400> 142

cacgaattca ccaaccaaac tccactgtct ccaactctcc atcgcgtctg ctacgcctgt 60

cctgcaggac gaccaatggc ttccaggaag ttcttcgtgg gtggcaactg gaaatgcaac 120

ggtactggcg aggacgtgaa gaagatcgtc accgtgctca accaag 166

<210> 143
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 143

gcctcctctc ccgttccccc accaaccgca gcagcgagag cgagactgag aatggccgcg 60

gcgccgtcgt ccctcgtgtc ctcccatctc tctcgcctcg ccgacctccg ccgcgcggcg 120

cgccggccac tcccaccgtc ccacagcagc ttcgcgtcgg ctgctcgcac cgccgcgccc 180

agcgcgtcgt cgccatggct ggatccggca agttcttcgt cggaggcaac tggaagtgca 240

acgtaacaaa ggactccgtt agcaagcttg tctctgaact gaatgctgct accctcgaaa 300

ctgatgtaga tgttgtggtg gc 322

<210> 144
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 144

cctcgccctc gccgcctcct ctcccgttcc cccaccaacc gcagcagcga gagcgagact 60

gagaatggcc gcggcgccgt cgtccctcgt gtcctcccat ctctctcgcc tcgccgacct 120

ccgccgcgcg cggcgccggc cactcccacc gtcccacagc agcttcgcgt cggctgctcg 180

ctccgccgcg cccagcgcgt cgtcgccatg gctggatccg gcaagttctt cgtcggaggc 240

aactggaagt gcaacggaac aaaggactcc gttagcaagc ttgtctctga actgaatgct 300

gct 303

<210> 145
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 145

ctcgccgcct gctcctctcc agttctcccc caccaaccgc agcagcgaga gcgagactga 60

gaatggccgc ggcgccgtcg tccctcgtgt cctcccatct ctcccgcctc gccgacctcc 120

gccgcgctgc ggcgccggcc actcccaccg tcccacagca gcttcgcgtc ggcttctcgc 180

gccgccgcgc ccagcgcgtc gtcgccatgg ctggatccgg caagttcttc gtcggaggca 240

actggaagtg caacggaaca aaggactccg 270

<210> 146
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 146

ccgacgcgtg ggcgccgcct gctcctctcc agttctcccc caccaaccgc agcagcgaga 60

cgagactgag aatggccgcg gcgccgtcgt ccctcgccac ctcccatctc tcccgcctcg 120

ccgacctccg ccgcgcggcg cgccggccac tcccaccgtc ccacagcagc ttcgcgtcgg 180

cttctcgcgc cgccgcgccc agcgcgtcgt cgccatggct ggatccggca agttcttcgt 240

cggaggcaac tggaagtgca acgtaacaaa ggactccgtt agcaagcttg tctctgaact 300

g 301

<210> 147
<211> 282
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (149)
<223>

<400> 147

cccacgcgtc cgcgccgcct gctcctctcc agttctcccc caccaaccgc agcagcgaga 60

gcgagactga gaatggccgc ggcgccgtcg tccctcgtgt cctcccatct ctcccgcctc 120

gccgacctcc gccgcgcggc ggcgccggnc cactcccacc gtcccacagc agcttcgcgt 180

cggcttctcg cgccgccgcg cccagcgcgt cgtcgccatg gctggatccg gcaagttctt 240

cgtcggaggc aactggaagt gcaacgcaac aaaggactcc gt 282

<210> 148
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 148

tcgccctcgc cgcctgctcc tctccagttc tcccccacca accgcagcag cgagagcgag 60

actgagaatg gccgcggcgc cgtcgtccct cgtgtcctcc catctctccc gcctcgccga 120

cctccgccgc gcggcgcgcc ggccactccc accgtcccac agcagcttcg cgtcggcttc 180

tcgcgccggc gcgcccagcg ggtcgtcgcc atggctggat ccggcaagtt cttcgtcgga 240

ggcaactgga agtgcaacgc aacaaaggac tcc 273

<210> 149
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 149

acgaactgct acccccctcgc ctcgccctcg ccgcctgctc ctctccagtt ctcccccacc 60

aaccgcagca gcgagagcga gactgagaat ggccgcggcg ccgtcgtccc tcgtgtcctc 120

ccatctctcc cgcctcgccg acctccgccg cgcggcggcg ccgagccact cccaccgtcc 180

cacagcagct tcgcgtcggc ttctcgcgcc gccgcgccca gcgcgtcgtc gccatggctg 240

gatccggcaa gttcttcgtc ggaggcaact ggaag 275

<210> 150
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 150

tggacgaact gctacccccct cgcctcgccc tcgccgcctg ctcctctcca gttctccccc 60

accaaccgca gcagcgagag cgagactgag aatggccgcg gcgccgtcgt ccctcgtgtc 120

ctcccatctc tcccgcctcg ccgacctccg ccgcgcggcg gcgccggacc actcccacag 180

tcccacagca gcttcgcgtc ggcttctcgc gccgccgcgc ccagcgcgtc gtcgccatgg 240

ctggatccgg caagttcttc gtcggaggca actggaagtg cgtaagtgca tgttctgctt 300

<210> 151
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 151

acgaactgct accccctcgc ctcgccctcg ccgcctgctc ctctccagtt ctccccccacc 60

aaccgcagca gcgagagcga ggactgagaa tggccgcggc gccgtcgtcc ctcgtgtcct 120

cccatctctc ccgcctcgcc gacctccgcc gcgcggcggc gccggccact cccaccgtcc 180

cacagcagct tcgcgtcggc ttctcgcgcc gccgcgccca gcggtcgtcg ccatggctgg 240

atccggcaag ttctt 255

<210> 152
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 152

cgaaccttgg cgtctgccct accaaccgca gcagcgacac tagaatggcc gcggcgccgt 60

catccctcgc gtcctcccac ctctccccaa tcgcggcggt gtccactccc gccgtcccac 120

atcagcttcg catcggctgc tcccgccgcc gcgcccagcg catcgttgcc atggctggat 180

ccggcaagtt cttcgtcgga ggcaactgga agtgcaatgg aacaaaggac tccattagca 240

aacttgtctc tgaattgaat gctgctaccc ttgaaactga tgt 283

<210> 153
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 153

ccgaaccttg gcgtctgccc taccaaccgc agcagcgaca ctagaatggc cgcggcgccg 60

tcatccctcg cgtcctccca cctctcccca atcgcggcgg tgtccactcc cgccgtccca 120

catcagcttc gcaccggctg ctcccgccgc cgcgcccagc gcatcgttgc catggctgga 180

tccggcaagt tcttcgtcgg aggcaactgg aagtgcaatg gaacaaagga ctccattagc 240

aaacttgtct ctgaattgaa tgctgctacg cctgaaactg at 282

<210> 154
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 154

cggctcgagc aaccgcagca gcgacactag aatggccgcg gcgccgtcat ccctcgcgtc 60

ctcccagctc tccccaatcg tcggggtgtc cactcccgcc gtcccacatc agcttcgcat 120

cggctgctcc cgccgccgcg cccggcgcat cgttgccatg gctggatccg gcaagttctt 180

cgtcggaggg ccctggacgt gcaatggaac aaaggactcc attaacaaac ttgtc 235

<210> 155
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 155

gcttctagtc cctcgcctac cccgcccccg aacctggcgt ctgccctacc aaccgcagca 60

gcgacactag aatggccgcg gcgccgtcat ccctcgcgtc ctcccacctc tccccaatcg 120

cggcggtgtc cactcccgcc gtcccacatc agcttcgcat cgcttgctcc cgccgccgcg 180

ccgggcgcat cgttgccatg gctggatccg gcaagttctt cgtcggaggc aactggaagt 240

gcaatggaac aaaggctcca ttagcaaact tgt 273

<210> 156
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 156

cagagagagg caggaacaac aatggatgtt gttgctgcac aaacaaaggc tattgctgaa 60

aaaatatcag attggacaaa tattgtgttg gcatatgaac cagtttgggc tattggtacc 120

ggcaaagttg caactcctgc tcaggctcag gaggttcatg atggtctgag aaagtggctc 180

cactccaatg ttagccctgc agttgctgaa ttgacaagga taatttatgg agggtctgta 240

aatggagcta actgcaaaga acttgcagct caaccagatg ttgatggatt ccttgttggt 300

ggagc 305

<210> 157
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 157

cattggacaa atattgtgtt ggcatatgaa ccagtttggg ctattggtac cggcaaagtt 60

gcaactcctg ctcaggctca ggaggttcat gatggtctga gaaagtggct ccactccaat 120

gttagccctg cagttgctga attgacaagg ataatttatg gagggtctgt aaatggagct 180

aactgcaaag aacttgcagc tcaaccagat gttgatggat tccttgttgg tggagcctca 240

ttgaagcctg aattcgtgga catcatcaag tctgccactg tcaagtcttc 290

<210> 158
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 158

aaacttttga agtatgtttt gagcagatga aggcttttgc agatagtatt tcaaactggg 60

ccgatgttgt gattgcatat gagcctgttt gggctattgg aaccggaaaa gttgctactc 120

ctgagcaagc ccaggaagtt catgctgctg tacgcgattg gttgacgacc aacatatcac 180

ctgatgttgc ctctagcacc cgaataatct atggaggttc tgtgaatgca gccaactgtg 240

cagagctagc aaagaaagag gatatcgatg gttttcttgt tggtggtgcc tccttgaagg 300

ccccggact 309

<210> 159
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 159

gtgattgcat atgagcctgt ttgggctatt ggaaccggaa aagttgctac tcctgagcaa 60

gcccaggaag ttcatgctgc tgtacgcgat tggttgacga ccaacatatc acctgatgtt 120

gcctctagca cccgaataat ctatggaggt tctgtgaatg cagccaactg tgcagagcta 180

gcaaagaaag aggatatcga tggttttctt gttggtggtg cctccttgaa ggccccggac 240

ttcgccacca ttatcaactc agtgaccgcc aagaaagttg 280

<210> 160
<211> 295
<212> nucleic acid

<213> Zea mays

<220>
<221> unsure
<222> (263)
<223>

<400> 160

cagttaaggt tatctgccgt gcatagcgag agcgttctgg aagagtaggg atgcagggat 60

aacttttgaa gtatgttttg agcagatgaa ggcttgtgca gatagtattt caaactgggc 120

cgatgttgtg attgcatatg agcctgtttg ggctattgga accggataag ttgctactcc 180

tgagcaagcc caggaagttc atgctgctgt acgcgattgg ttgacgacca acatatcacc 240

tgatgttgcc tctagcaatt ttntaatcta tggaggttct gtgaatgcag ccaac 295

<210> 161
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 161

agagagggaa gcaggcaaaa cttttgatgt atgttttagg cagatgaagg cttttgcaga 60

tagtatttca aactgggcag atgttgtaat tgcatacgag cctgtttggg cgattggaac 120

cggaaaagtt gctactcctg agcaagccca ggaagttcat gctgctgtac gcaattggct 180

gaagaccaac atatcacccg atgttgcctc tagcactcga ataatctatg gaggttctgt 240

ga 242

<210> 162
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 162

cggaaaagtt gctactcctg agcaagccca ggaagttcat gctgctgtac gcgattggtt 60

gacgaccaac atatcacctg atgttgcctc tagcacccga ataatctatg gaggttctgt 120

gaatgcagcc aactgtgcag agctagcaaa gaaagaggat atcgatggtt ttcttgttgg 180

tggtgcctcc ttgaaggccc cggacttcgc caccattatc aactcagtga ccgccaa 237

<210> 163
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 163

cccacgcgtc cggcctcgtt gaaggccccg gacttcgcca ccattatcaa ctcagtgacc 60

gccaagaaag ttgcagcctg atggaccacc ctgtgagaaa taagaggcca tcagcgtgtc 120

gcctcatctg ccacgcctta aagcctgtat aggaggtgat ccgtgtgatg gtgtgcccgt 180

cacctcctgt ttttgctgat ttgcagcacg gggacagaaa ataatgtttt gctctcgtgg 240

acctgcactg cacgtgacga ggagagttca gttgtcgtga gcgatgtacg ttggggatat 300

tgtgatgtgg tcct 314

<210> 164
<211> 167
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (148),(151)
<223> unsure at all n locations

<400> 164

cggaggttct gtgaatgcag ccaactgtgc agagctagca aagaaagagg atatcgatgg 60

ttttgttgtt ggtggtgcct ccttgaaggc cccggacttc gccaccatta tcaactcagt 120

gaccgccaag aaagttgcag cctcgtgnga ncacctgtga agaaata 167

<210> 165
<211> 368
<212> nucleic acid
<213> Zea mays

<400> 165

ttcggctcga ggaattgaat gctgtaccct tgaaactgat gtagatgttg tggtggcaca 60

tccattcatc tatattgatc aggttaagaa ttcactaact ggtcgcattg aggtttctgc 120

tcagaatgtg tggattggaa aaggaggagc ctacaccgga gagatcagtg cagaacaact 180

ggtggacatc ggctgtcaat gggttattct tggacactct gagcgtagac atattattgg 240

tgaaaatgat gagtttattg gaaagaaggc tgcatatgca ttgagcccaa atgttaaggt 300

tattgcctgc ataggagagc tgctggaaga gagggaagca ggcaatactt ttgatgtatg 360

tctaggca 368

<210> 166
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 166

cctcgaaact gatgtagatg ttgtggtggc tcctccattc atctatatcg atcaggtcaa 60

gaattcacta acgggtcgca ttgaggtttc tgctcagaat gtgtggattg gaaaaggagg 120

agcctacacc ggagagatca gtgcagaaca actggtggac atcggttgtc aatgggttat 180

tcttggacac tcagagcgta gacatattat tggtgaaaat gacgagttta ttgggaagaa 240

ggctgcatat gcattgagcc aaaatgttaa ggttattgcc tgcataggag agcttctgga 300

agag 304

<210> 167
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 167

gtggtggcac ctccatttat ctatattgat caggttaaga attcactaac tggtcgcatt 60

gaggtttctg ctcagaatgt gtggattgga aaaggaggag cctacaccgg agagatcagt 120

gccgaacaac tggtggacat cggctgtcaa tgggttattc ttggacactc tgagcgtaga 180

catattattg gtgaaaatga tgagtttatt ggaaagaagg ctgcatatgc attgagccaa 240

aatgttaagg gtattgcctg c 261

<210> 168
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 168

tctatatcga tcaggtcaag aattcactaa cgggtcgcat tgaggtttct gctcagaatg 60

tgtggattgg aaaaggagga gcctacaccg gagagatcag tgcagaacaa ctggtggaca 120

tcggttgtca atgggttatt cttggacact cagagcgtag acatattatt ggtgaaaatg 180

acgagtttat tgggaagaag gctgcatatg cattgagcca aaatg 225

<210> 169
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 169

atacaattta gaagcgcccc tcctcctctc ccccatccgt acccaatcta atcgacaccc 60

ggccgagatg ggccgcaagt tcttcgttgg tggcaactgg aaatgcctgg aagagcccgc 120

gttcttcttc caatgcgcct gtgcttccag gctccagccc agagcaaatc gtaaaagccc 180

ttcataagtt tcgtgatgca tgttgtctgt aggagcagag gagttcgata tccaactttt 240

ggagacccat tctcgtttgc tgcacgaatt aaccttacgt ttcttgtcat ggagctcggg 300

gcttgctcaa tctgagcata ggttggag 328

<210> 170
<211> 228
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (13),(24),(28),(41),(44),(53),(70),(77),(95)...(96),
(135)...(136),(140),(152),(162),(186),(199),(202),(204),
(211)...(212),(216),(219),(221)...(222),(224)
<223> unsure at all n locations

<400> 170

gaagggaggt gcncccactg aatncatnac catttgagat nctngacaac ctnctggggg 60

tagggttcan ggctggncgc cctgaaagga gaacnntaat aagaaaataa catgaattcg 120

ggatccgcag agtcnncgtn tgcggcggcg gngggactaa angtcattgc atgtgttgcc 180

gagacncttg aacacaacna gntngtggac nncatnctnc nncncggg 228

<210> 171
<211> 339
<212> nucleic acid
<213> Zea mays

<400> 171

ctagagtttt gcagcaacct agcactaagg ctcctgctaa aaagggaaaa cagcaagcat 60

tgacaagtgc tgaagaacca gatgagcctc ctctgtgaag aggagcctac accggactga 120

tcagtgcaaa acaactggtg gacatcatct gtcaatggat gattcttgga cactctgagc 180

gtagacatat tattggtgaa aatgatgagt ttattggaaa gaaggctgca tatgcataga 240

gccaaaatgt taagggcatt gcctgcatag gagagctgct tgaagagagt gaagcatgca 300

aaactcttaa tgtatgttga atgcagatga aggcttttg 339

<210> 172
<211> 348
<212> nucleic acid
<213> Zea mays

<400> 172

aacacgcgtc cggcctcctt gaaggccccg gacttcgcca ccattatcaa ctcagtgacc 60

gccaagaaag ttgcagcctg atggaccacc ctgtgaagaa ataagaggcc atcaccgtgt 120

cgcctcatct gccacgcctt aaagcctgta ggaggcgtca cctcctgttt ttgctgattt 180

gcagcacggg gacagaaaat aatgttttgc tctcgtggat ctgcacgtga cgaggagagt 240

tcagttgtcg tgagcgatgt acgttgggaa tattgttatg tggtcctttt ctaaagaaaa 300

aaaatgttga cagtcaagga aaaataataa aaaaaggcgg ccgctcta 348

<210> 173
<211> 373
<212> nucleic acid
<213> Zea mays

<400> 173

gcgcgcctcg gcttcagcgc catggcgccc tccaggaagt tcttcgttgg gggagactgg 60

gagaagaacg ggcggaagca cagtctgggg gagctcatcg gcactctgaa cgcggtcaag 120

gtgccggccg acaccgatgt ggaacgtgct cagcatactg cctatatcga cttagtccgg 180

cagaagctag atcccaagaa cgctgaggct gcgcagaact gctacaaagt gactaatgac 240

gcttgaactg atgagatcag ccctggcatg atcaaacact gcggagccac acgggcggta 300

ctggggcact cagagagaac gcatgtcttt ggggagtcag atgagctgat tgggcacaaa 360

gtgcgccatg ctc 373

<210> 174
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 174

ggtggagctt ctttgaagcc tgagttcatc gacatcatca acgcggccac cgtgaagggc 60

gctgaagatg ttacgctgaa gacgaacata cttttttttt gctcaactgt gctatgtaag 120

ctagtagctt ttgcgcagga gcagagactg ttttgcctgc ccccaacttt tagcttgagc 180

ttgctaataa tgtttacctc tggacgtatc aataatggtg cttatgtacc cctttttttgt 240

gccgaattac ggtggatccg tcatctgaac catgggtttg gtgtatgtaa ttgcgtcacc 300

cgatgcctaa ggtgagactg aagtttttgg acatttggga caaggtagcc ttgtgcccca 360

cattggtcga atgctgccaa aactgtaccg gtcatctgtg ctccgtacgg attagcctga 420

tctgcgaatg caacttgtca gc 442

<210> 175
<211> 433
<212> nucleic acid
<213> Zea mays

<400> 175

cccacgcgtc cgggatcatt tacggaggct ctgtaactgc cgcgaactgc aaagagctgg 60

cagcacagcc tgatgtcgat gggtttcttg tcggtggagc ttctttgaag cctgagttca 120

tcgacatcat caacgcggcc accgtgaagt ccgcttaaga tgttacgctg aagacgaaca 180

tacttttttt ttgctcaact gtgctatgta agctagtagc ttttgcgcag gagcagagac 240

tgttttgcct gcccccaact tttagcttga gcttgctaat aatgtttacc tctggacgta 300

tcaataatgg tgcttatgta cccctttttt gtgccgaatt acggtggatc cgtcatctga 360

accatgggtt tggtgtatgt aattgcgtca cccgatgcct atggtgagac tgaagttttt 420

ggacatttgg gac 433

<210> 176
<211> 427

<212> nucleic acid
<213> Zea mays

<400> 176

cgcaccccaa tctaatcgac acctcgccgt gatgggccgc aagttcttcg tcggtggcag 60

ctggaaatgc aatggaacca cagatcaggt cgagaagatt gtcaaaaccc tgaatgaagg 120

acaggttccc ccttcagatg ttgtggaggt cgttgtcagc cctccttatg tcttccttcc 180

tgtggtcaag agccagctgc gccaagagtt ccatgttgcg gctcagaact gctgggttaa 240

gaagggaggt gctttcaccg gtgaagtcag tgctgagatg ctcgtcaacc ttggtgttcc 300

ctgggtcatt cttggacact ctgaaaggag agctctgctg ggagaatcaa atgaatttgt 360

tggagacaag gttgcgtatg ccctgtctca gggactaaag gtcattgcat gtgttggtga 420

gacactt 427

<210> 177
<211> 457
<212> nucleic acid
<213> Zea mays

<400> 177

aaggttgcgt atgccctgtc tcagggacta aaggtcattg catgtgttgg tgagacagtt 60

gggcagaggg aggctgggtc taccatggag gttgttgctg cacaaacaaa agcaattgct 120

gagaagatca aggactggag caacgtagtt gttgcctatg aaccagtttg ggctattgga 180

actggtaaag ttgccacccc agctcaggct caggaagtgc acgccttcct gagggattgg 240

ctaaagacca acgtcagccc tgaggttgct gaatctacta ggatcattta cggaggctct 300

gtaactgccg cgaactgcaa agagctagca gcacagcctg atgtcgatgg gtttcttgtc 360

ggtggagctt ctttgaagcc tgagttcatc gacattatca acgcggtcac cgtgaagtcc 420

gcttaagatg ttacgctgaa gacgaacata ctttttt 457

<210> 178
<211> 471
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (8),(338)

<223> unsure at all n locations

<400> 178

agggtttntc aacgtcacgt cgcacggaca gtacagacta cacggtcgag cacgcgtccg 60

accacacgtc cgcccacgcg tccggctgcg ccaaaatttc aatgttgcgg ctcaaaactg 120

ctggttaaac aagggaggtc ctttcactgg tgaactcagt gctgagatgc tcgtcaacct 180

tggtgttccc tgcgtcattc ttggacactc tgaaacgaga gctctgctgg gagaatcaaa 240

tgaatttgtt ggagacaagg ttgcgtatgc cctgtctcag ggactaaagg tcattgcatg 300

tgttggtgag acccttgagc agaaggaggc tgggtctnac atggatgttg ttgctgcaca 360

aacaaaagca attgctgaga agatcaagga ctggagcaac gtacttgttg cctatgaacc 420

agtttgggct attggaactg gtacagttgc cacctcagct caggctcagg a 471

<210> 179
<211> 402
<212> nucleic acid
<213> Zea mays

<400> 179

cccacgcgtc cgcccacgcg tccggacaag gttgcgtatg ccctgtctca gggactaaag 60

gtcattgcat gtgttggtga gacccttgag cagagggagg ctgggtctac catggatgtt 120

gttgctgcac aaacaaaagc aattgctgag aagatcaagg actggagcaa cgtagttgtt 180

gcctatgaac cagtttgggc tattggaact ggtaaagttg ccaccccagc tcaggctcag 240

gaagtgcacg cctccctgag ggattggcta aagaccaatg ccagccctga ggttgctgaa 300

tctactagga tcatctacgg aggctctgta actgctgcga actgcaaaga gctagcagca 360

cagcctgatg tcgatggttt tcttgtcggt ggagcttctt tg 402

<210> 180
<211> 450
<212> nucleic acid
<213> Zea mays

<400> 180

atttagaagc gcccctcctc ctctcccccct tccgtaccca atctaatcga cacccggccg 60

agatgggccg caagttcttc gttggtggca actggaaatg caatggaacc gcagatcagg 120

ttgagaagat tgtcaaaacc ctgaatgaag gaaatgttcc ctcttcagat gttgttgagg 180

tcgttgtcag tcctccttat gtgttcctcc cggtggtcaa gagccagctg cgccaagagt 240

tccaagttgc tgcttagaac tgctgggtga ataagggagg tgcattcact ggtgaaatta 300

gtgctgaaat gctcgtcaac cttggcgttc cctgggtcat tcttggacac tctgaaagga 360

gagctctgct gggagaatca aatgagtttg ttggagacaa ggttggcttt gctctgtcta 420

agggactaaa ggtcattgca tgtgttggtg 450

<210> 181
<211> 503
<212> nucleic acid
<213> Zea mays

<400> 181

cggcgctcga ggggctgact gttcatttcg cctgtcggtg caagtccgaa attcgccggg 60

ccacccacgc aaccgaacca atctagaagc tcccctctcc ctccctccct ctctctctct 120

ctcttcgccg tccgaagctc cgcacccaat ctaatcgaca cctcaccgag atgggccgca 180

agttcttcgt cggtggcaac tggaaatgca atggaaccac agatcaggtc gagaagattg 240

tcaaaaccct gaatgaagga caggttcccc cttcagatgt tgtcgaggtc gttgtcagcc 300

ctccttatgt cttccttcct gtggtcaaga gccagctgcg ccaagagttc catgttgctg 360

ctcagaactg ctgggtgaag aagggaggtg ctttcactgg tgaagtcagt gctgagatgc 420

tcgtcaacct tggtgttccc tgggtcattc ttggacactc tgaaaggaga gctctgctgg 480

gagaatcaaa tgaatttgtt gga 503

<210> 182
<211> 387
<212> nucleic acid
<213> Zea mays

<400> 182

cccacgcgtc cgcgcccctc ctcctctcct tcatccgtac ccaatctaat ctacacccgg 60

gcgagatggg ccgcaagttc ttcgttggtg gcaactggaa atgcaatgga accgcagatc 120

aggttgagaa gattgtcaaa accctgaatg aaggaaatgt tccctcttca gatgttgttg 180

aggtcgttgt cagtcctcct tatgtgttcc tcccggtggt caagagccag ctgcgccaag 240

agttccaagt tgctgctcag aactgctggg tgaagaaggg aggtgcattc actggtgaaa 300

ttagtgctga aatgctcgtc aaccttggcg ttccctgtgt cattcttgga cactctgaaa 360

ggagagctct gctgggagaa tcaaatg 387

<210> 183
<211> 404
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (397)
<223>

<400> 183

acttgagcag agggaggctg ggtctaccat ggaggttgtt gctgcacaaa caaaagcagt 60

tgctgagaag atcaaggact ggagcaacgt agttgttgcc tatgaaccag tttgggctat 120

tggaactggt aaagttgcca ccccagctca ggctcaggaa gtgcacgcct ccctgaggga 180

ttggctaaag accaacgtca gccctgaggt tgctgaatct actaggatca tttacggagg 240

ctctgtaact gccgcgaact gcaaagagct agcagcacag cctgatgtcg atgggtttct 300

tgtcggtgga gcttctttga agcctgagtt catcgacatc atcaacgcgg ccaccgtgaa 360

gtccgcttaa gatgttacgc tgaagacgaa catactnttt tttt 404

<210> 184
<211> 413
<212> nucleic acid
<213> Zea mays

<400> 184

aatccaatct agaagcaccc ctctccctct ctctctcttc gccgtccgaa gctccgcacc 60

ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg gcaactggaa 120

atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg aaggacaggt 180

tccccccttca gatgttgtgg aggtcgttgt cagccctcct tatgtcttcc ttcctgtggt 240

caagagccag ctgcgccaag agttccatgt tgctgctcag aactgctggg tgaagaaggg 300

aggtgctttc actggtgaag tcagtgctga gatgctcgtc aaccttggtg ttccctgggt 360

cattcttgga cactctgaaa ggaaagctct gctgggaaaa tcaaatgaat ttg 413

<210> 185
<211> 423
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (7),(9)...(11),(29),(47),(55),(72)
<223> unsure at all n locations

<400> 185

aggggggntnn naacagggcc ccagtcccnc gcacgctcca ccggaangga agggncgacc 60

cgagcgagcg gntgctcaga actgctgggt gaagaagggt tgtgcattca ctggtgaaat 120

tagtgctgaa atgctggtca accttggcgt tccctgggtc attcttggac actctgaaag 180

gagagctctg ctgggagaat caaatgagtt tgttggagac aaggttgctt ttgctctgtc 240

tcagggacta aaggtcattg catgtgttgg tgagaccctt gaggagaggg aggctggttc 300

aaccatggat gttgttgctg cacaaacaaa agcaattgct gagaagatca aggactggag 360

caacgttgtt cttgcctatg aaccagtctg ggctattgga actggcaaag tcgccacccc 420

agc 423

<210> 186
<211> 423
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (354)
<223>

<400> 186

aagctccgac ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg 60

gcaactggaa atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg 120

aaggacaggt tccccccttca gatgttgtcg aggtcgttgt cagccctcct tatgtcttcc 180

ttcctgtggt caagagccag ctgcgccaag agttccatgt tgctgctcag aactgctggg 240

tgaagaaggg aggtgctttc actggtgaag tcagtgctga gatgctcgtc aaccttggtg 300

ttccctgggt cattcttgga cactctgaaa ggagagctct gctaggagaa tcanatgaat 360

ctgttggaga caaggttgcg tatgccctgt cttaaggact aaaggtcatt gcatgttgtg 420

gtg 423

<210> 187
<211> 379
<212> nucleic acid
<213> Zea mays

<400> 187

gggaggtgca ttcactggtg aaattagtgc tgagatgctc gtcaaccttg gcgttccctg 60

ggtcattctt ggacactctg aaaggagagc tctgctggga gaatcaaatg agtttgttgg 120

agacaaggtt gcttttgctc tgtctcaggg actaaaggtc attgcatgtg ttggtgagac 180

ccttgaggag agggaggctg gttcaaccat ggatgttgtt gctgcacaaa caaaagcaat 240

tgctgagaag atcaaggact ggagcaacgt tgttcttgcc tatgaaccag tctgggctat 300

tggaactggc aaagtcgcca ccccagctca ggctcaggaa gtgcacgcct tcctgaggga 360

ttgggtaaag atcaatgtc 379

<210> 188
<211> 349
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (286)
<223>

<400> 188

cggacgcgtg ggctgaaagg agagctctgc tgggagaatc aaatgaattt gttggagaca 60

aggttgcgta tgccctgtct cagggactaa aggtcattgc atgtgttggt gagacacttg 120

agcagaggga ggctgggtct accatggagg ttgttgctgc acaaacaaaa gcaattgctg 180

agaagatcaa ggactggagc aacgtagttg ttgcctatga accagtttgg gctattggaa 240

ctggtaaagt tgccacccca gctcaggctc aggaagtgca cgcctncctg agggattggc 300

taaagaccaa cgtcagccct gaggttgctg aatctactag gatcattta 349

<210> 189

<211> 314
<212> nucleic acid
<213> Zea mays

<400> 189

caggtcgaga agattgtcaa aaccctgaat gaaggacagg ttccccttc agatgttgtg 60

gaggtcgttg tcagccctcc ttatgtcttc cttcctgtgg tcaagagcca gctgcgccaa 120

gagttccatg ttgcggctca gaactgctgg gttaagaagg gaggtgcttt caccggtgaa 180

gtcagtgctg agatgctcgt caaccttggt gttccctggg tcattcttgg acactctgaa 240

aggagagctc tgctgggaga atcaaatgaa tttgttggag acaaggttgc gtatgccctg 300

tctcagggac taaa 314

<210> 190
<211> 360
<212> nucleic acid
<213> Zea mays

<400> 190

gcctctgttg gccgttcgaa tctccgcacc caatttaatc gacacctcac cgagatgggc 60

cgcagagttc ttcgtcggtg gcaactggaa atgcaatgga accacagatc aggtcgagaa 120

gattgtcaaa accctgaatg aaggacaggt tccccttca gatgttgtcg aggtcgttgt 180

cagccctcct tatgtcttcc ttcctgtggt caagagccag ctgcgccaag agttccatgt 240

tgctgctcag aactgctggg tgaagaaggg aggtgctttc actggtgaag tcagtgctga 300

gatgctcgtc aaccttggtg ttccctgggt cattcttgga cactctgaaa agagagctct 360

<210> 191
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 191

gccaaataca atttagaagc gcccctcctc ctctccccca tccgtaccca atcgaatcga 60

cacccggccg agatgggccg caagttcttc gttggtggca actggaaatg caatggaacc 120

gcagatcagg ttgagaagat tgtcaaaacc ctgaatgaag gaaatgttcc ctcttcagat 180

gttgttgagg tcgttgtcag tcctccttat gtgttcctcc cggtggtcaa gagccagctg 240

cgccaagagt tccaagttgc tgctcagaac tgctgggtga agaagggagg tgcattcact 300

ggtgaaatta gtgctgaaat gctcgtcaac cttggcgt 338

<210> 192
<211> 430
<212> nucleic acid
<213> Zea mays

<400> 192

agcatcgtag gcggccatca tcaaactaca ggctcatggc taggactcgc gggcagatac 60

acgcctcaga attgattcgt aggagacaat gttgcgtatg ccctgtctca tggactaacg 120

gtcattgcat gtgttggtga tacccttgat catagggatg ctgagtctac catggatgtt 180

gttgctgcac atccagaagc aattgctgat aacatcaagg actggatcaa cgtaattgtt 240

gcctatgaac cactttgggc tattggaact ggtaaagttg ccaccccagc tcaggctcag 300

gaagtgcacg cctccctgaa ggattggcta aagaccaatg ccatccctga ggttgctgaa 360

tctactagga tcatctacgg aggctctgta actgctgcga actgcagata gctagcagca 420

cagcctgatg 430

<210> 193
<211> 408
<212> nucleic acid
<213> Zea mays

<400> 193

gcgatccaat ctagactctc ccctcttcct ccctccctct ctctatctct cttcggggtc 60

cgaatctacg gacccaagcg aatcgacacc tcaccgacat gggccgcacg ctcttcatcc 120

gtggcaactg gaaatgcaat ggaaccacag atcatgtcgc gaacatagtc aaaaccctga 180

atgaacgaca ggttcccccct tcagatcttg accaggtcgt tgccagccct acttatgtct 240

tccttcctgt gctcaagagc cagctgtgcc aagagttcca tgatgctgct cataactgct 300

gggtgaagaa aggacgtgct ttcactggtg aactcagatc tgagatgctc ctcaaccttg 360

gtgatccctg agtcattctt ggacactctg aaacgagaac tctgcttg 408

<210> 194
<211> 267
<212> nucleic acid

<213> Zea mays

<400> 194

tcggccacgc cgttcgccac gcgttcgctt ggacactctt aaaggagagc tcttcttgga 60

gaatcaaatg aatttgttgg agacaaagtt gcgtatgccc tgtctcaggg actaaaggtc 120

attgcatgtg ttggtgagac acttgagcag aaggaggctg ggtctaccat ggaggttggt 180

gctgcacaaa caaaagcaat tgctgagaag atcaaggact ggagcaacgt agttgttgcc 240

tatgaaccag tttgggctat tggaact 267

<210> 195
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 195

tcgtgctcac tctacaagga gagctctgct gggagaatca aatgaatttg ttggaaacaa 60

ggttgcgtat gccctgtctt agggactaaa ggtcattgca tgtgttggtg agacccttga 120

gcagaaggag gctgggtcta ccatggatgt tggtgctgca caaacgaaag caattgctga 180

gaagatcaag gactggagca acgtagtttg tgcctatgaa ccatgttggg ctatcggaac 240

t 241

<210> 196
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 196

atccaatcta gaagctcccc tctccctccc tccctctctc tctctctctt cgccgtccga 60

agctccgcac ccaatctaat cgacacctca ccgagatggg ccgcaagttc ttcgtcggtg 120

gcaactggaa atgcaatgga accacagatc aggtcgagaa gattgtcaaa accctgaatg 180

aaggacaggt tccccccttca gatgttgtcg aggtcgttgt cagccctcct tatgtcttcc 240

ttcctgtggt caagagccat 260

<210> 197
<211> 398
<212> nucleic acid

<213> Zea mays

<400> 197

cagccctgag gtctctgaat ctacaaggat catctatgga ggttcagtaa ctgctgcgaa 60

ctgcaaagag ctggcagcac agcctgatgt cgatggtttc cttgtgggcg gtgcttcttt 120

gaagcccgag ttcatcgaca tcatcaacgc cgccgccgtg tgaagtccgc tgaagatgtt 180

ccaacccttc accctgttgc ggtgatgtgc tgaagacaga tcagactact tttttgttta 240

accgtgcagt gctatgtaag ctactaactt tgcgctggtg cggatgctga tttccctccc 300

cctagctttt tgtgaggcta ctctacagct tgattcagct tgctaataat gtttgcctct 360

ggacatagcg atagtggtgt ttgtgtagcc cttttttt 398

<210> 198
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 198

caatttagaa gcgcccctcc tcctctcccc atccgtgacc caatctaatc gacacccggc 60

cgagatgggc cgcaagttct tcgttggtgg caactggaaa tgcaatggaa ccgcagatca 120

ggttgagaag attgtcaaaa ccctgaatga aggaaatgtt ccctcttcag atgtcgttga 180

ggtcgttgtc aagcctactt atgtgttcct cccggtggtc aagagccagc t 231

<210> 199
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 199

ctgcaaagag ctggcagcac agcctgatgt cgatggtttc cttgtgggcg gtgcttcttt 60

gaggcccgag ttcatcgaca tcatcaacgc cgccgccgtg tgaagtccgc tgaagatgtt 120

ccaacccttc accctgttgc ggtgatgtgc tgaagacaga tcagactatt tttttgttta 180

accgtgcagt gctatgtaag ctactaactt tgcgctggtg cggatgctga tttccctccc 240

cctagctttt tgtgaggcta ctctacagct tgattcagct tgctaataat gtttgcctct 300

ggac 304

<210> 200
<211> 463
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (5)
<223>

<400> 200

agccngcgct acagaacagg cagcaccgtc gctctggcct ggcacctttg ggctggttta 60

tgtgcttgtg gatgtgcggg tggatgtgcg ggctacgcag ttagtcgtgt taagagcctt 120

aagccgtcgt ctagaatcgt cgggcgaaga agggaggcgt acctatcggc gaaaccagcg 180

tcgaaacgtc tgctaattcc ggtgcctttc gggctacctc cggatatctc gaaaggagag 240

tctcgtcggg agaactaaac gagcccgccg gagataaggc cgtccccgtc tcgctctagg 300

gatcaaaggc taccgtacgc gccggcgaga tttccgagga gagggaggtc ggcctaatta 360

cggacgccgc cgtcgtataa ataaaagtaa ccgtcgagaa gactaaggat cggagtaatg 420

ccgcctccgt tcacgaatta gctcgggtca ccggaatcgg taa 463

<210> 201
<211> 469
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (30),(33),(40)
<223> unsure at all n locations

<400> 201

agtcagcggt ggctttttga ttcccctgtn canatcacgn ctggccccgt tggacgtgtt 60

tatgtgcctg tggatgtgcg ggtggatgtg cgggctaccc acctatcgtg ttaagagcct 120

taagccgtgg tcggagatcg tcgggcgaag aagggaggcg tacctatcgg cgaaaccagc 180

gtcgaaacgt ctgctaattc cggtgccttt cgggctacct ccggatatct cgaaaggaga 240

gtctcgtcgg gagaactaaa cgagcccgcc ggagataagg ccgtccccgt ctcgctctag 300

ggatcaaagg ctaccgtacg cgccggcgag atttccgagg agagggaggt cggcctaatt 360

acggacgccg ccgtcgtata aataaaagta accgtcgaga agactaagga tcggagtaat 420

gccgcctccg ttcacgaatt agctcgggtc accggaatcg gtaaagctg 469

<210> 202
<211> 466
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (309)
<223>

<400> 202

ctcgtctgct acgcctctcc tgcaggacga ccaatggctt ccaggaagtt cttcgtgggt 60

ggcaactgga aatgcaacgg tactggcgag gacgtgaaga agatcgtcac cgtgctcaac 120

caagccgagg tgccctctga agacgtcgtc gaggtggtgg tgagtccgcc tttcgttttt 180

ctgcagcagg tcaaggggct gctgcggctg gacttcgccg tcgcagcgca gaactgctgg 240

gtgcgcaagg gcggcgcctt caccggcgag atcagtgctg agatgctggt aaacctgcag 300

gtgccctgng tcattttggg acattctgag cgcagagctc tgttgggtga atccagtgat 360

tttgttgctg ataaagttgc atatgcactc actcaaggtc tcaaggtaat tgcttgcatt 420

ggtgagaccc ttgagcagag agaggcagga acaacaatgg atgttg 466

<210> 203
<211> 402
<212> nucleic acid
<213> Zea mays

<400> 203

cccacgcgtc cgccctcgcg tctttgcgta cgaggacggc ttctagtccc tcgcctaccc 60

cgcccccgaa cctggcgtct gccctaccaa ccgcagcagc gacactagaa tggccgcggc 120

gccgtcatcc ctcgcgtcct cccacctctc cccaatcgcg gcggtgtcca ctcccgccgt 180

cccacatcag cttcgcatcg gctgctcccg ccgacgcgcc gggcgcatcg ttgccatggc 240

tggatccggc aagttcttcg tcggaggcaa ctggaagtgc aatggaacaa aggactccat 300

tagcaaactt gtctctgaat tgaatgctgc taccottgaa actgatgtag atgttgtggt 360

ggcaccctca tttatctata ttgatcaggt taaagaattc ac 402

<210> 204
<211> 415
<212> nucleic acid
<213> Zea mays

<400> 204

aatgggttat tcttggacac tctgagcgta gacatattat tggtgaaaat gaggagtgta 60

ttggaaagaa ggctgcatat gcattgagcc aaaatgttaa ggttattgcc tgcataggag 120

agctgctgga agagagggaa gcaggcaaaa cttttgatgt atgttttagg cagatgaagg 180

cttttgcaga tagtatttca aactgggcag atgttgtaat tgcatacgag cctgtttggg 240

ctattggaac cggaaaagtt gctactcctg aacaagccca ggaagttcat gctgctgtac 300

gcaattggct gaagaccaac atatgacccg atgttgcctc tagcactcga ataatctatg 360

gaggatctga gaatgcatgc aactgtgcgg agctagcaaa gaaagaagat attga 415

<210> 205
<211> 433
<212> nucleic acid
<213> Zea mays

<400> 205

gcgattggtt gacgaccaac atatcacctg atgttgcgtc tagcacacga ataatctatg 60

gaggttctgt gaatgcagcc aactgtgcag agctagcaaa gaaagaagat atcgacggtt 120

ttcttgttgg tggtgcctcg ttgaaggccc cggacttcgc caccattatc aactcagtga 180

ccgccaagaa agttgcagcc tgatggacca ccctgtgaga aataagaggc catcagcgtg 240

tcgcctcatc tgccacgcct taaagcctgt ataggaggtg atccgtgtga tggtgtgccc 300

gtcacctcct gtttttgctg atttgcagca cggggacaga aaataatgtt ttgctctcgt 360

ggacctgcac tgcacgtgac gaggagagtt cagttgtcgt gagcgatgta cgttggggat 420

attgtgatgt ggt 433

<210> 206
<211> 429
<212> nucleic acid
<213> Zea mays

<400> 206

ggtggcacct ccattcatct atattgatca ggttaagaat tcactaactg gtcggattga 60

ggtttctgct cagaatgtgt ggattggaaa aggaggagcc tacaccggag agatcagtgc 120

agaacaactg gtggacatcg gctgtcaatg ggttattctt ggacactctg agcgtagaca 180

tattattggt gaaaatgatg agtttattgg aaagaaggct gcatatgcat tgagccaaaa 240

tgttaaggtt attgcctgca taggagagct gctggaagag agggaagcag gcaaaacttt 300

tgatgtatgt tttaagcaga tgaaggcttt tgcagatagt atttcaaact gggcagatgt 360

tgtaattgca tacgaacctg tttgggctat tggaaccgga aaagttgcta cttcttgaac 420

aacccaaga 429

<210> 207
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 207

ccattcctcc ccaaaacaca tcctgcgatc ctcgaagcct ccgccgagca tcgatcatgt 60

cggcctactg cggcaagtac gcgggtacgt tccatcgtct cctccttcgt tgctgatctg 120

cttgtgatgt cgtttggcct cgtgtgtcgt agatctacga tctactagtt gttcgttgtt 180

gatgccctca gatctacctg cgtttgacga gtatgttaac gattcgtcta gctctgagag 240

acccaaggga tttgcggatc ctttttttaga tccgtacagg ctcttgcggt cgtgccta 298

<210> 208
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 208

cgctcagatc tcgctgtgat tgatgggtat gctaaggcta acggctatat ggacgggaga 60

acactctttg tagactgtac tgtccacaga tcggagtttg aaatggaatg tgtggacaga 120

aatctggtgg cctagcctaa cgattcgtat aggtctgaga gactcgttca gttgtaggat 180

ttgtggattt tttttagatc cgtacaggat tgtgctgtcg tgtgcccgcc aagtgcttgg 240

tggttgccaa aaggtgatgc ctctgatcgg tttggatatg ggatttgc 288

<210> 209
<211> 61
<212> nucleic acid
<213> Zea mays

<400> 209

ctcccagcac cacctcgccg cgatctccgt agcgtccgtc gcgtcgagca tcgatcatgt 60

c 61

<210> 210
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 210

agtcagatat gtaaatcgtt taaagctttg tgctagtcta atcttgatct gtggttcctt 60

ttagtcatga tgtttatgcc gatacaatta tatataaagc agtttttggt taataaacag 120

taaacttcct gaattaataa ttaaagttta ttttgtatta ttcaggatgg cctcctgatt 180

tgataatgga agtcattttg tattattcag tatagccttg gtacctggta gatagccatg 240

cttattatgc atattgtttt gcagatgagc tcatcaagaa tgctgcctac attggcaccc 300

ccggcaaggg tatccttgct gctga 325

<210> 211
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 211

tgcaccacag gaaagcgctg ccaccggcac catgccccac ccatacccag cactgacccc 60

ggaccatata aaggagcttg ctgacatcgc tcaccgcatt gtagctccgg gcaagggcat 120

cctggctgca gacgagtcca ctggaagcac tgccaagcgc ctgcagtcca ttggcagcga 180

gaacaccgag gagaacaggc gcttctaccg ccaactgctg ctgactgccg atgaccgtgt 240

gaatccctgc attggaaggg tgatcctttt ccacgagaca ctataccaga aggcaga 297

<210> 212
<211> 167
<212> nucleic acid
<213> Zea mays

<400> 212

tgtctatctg gaaggcacac tgctgaagct catcattgtc acccctggcc atgcttgcac 60

ccagaaattt tccaatgagg aaattgccat ggctatatac acagcacttc gtcgaacagt 120

gccccctgcc gtccctgggg tcactttcct gtctggaggg cagagtg 167

<210> 213
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 213

ctcgagccga atcggctcga ggtattagtt agataaccgt gctagtgctt attgattgtc 60

aagtcccact gttcttgctc taaatctgtg tctgttgttt tgcagatgag ctcatcaaga 120

atgctgccta catcggcacc cctggcaagg gtatccttgc tgctgatgag tcaactggca 180

ccagtggcaa gcgcctttcc agcatcaatg tcgagtacgt ggaggagaac cggcgggctc 240

tccgtgagct cctgttc 257

<210> 214
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 214

ggttgacaag ggtttggttc cattgcctgg atccaacaat gaatcatggt gccaaggtct 60

tgatggtttg gcttcaaggt gtgctgagta ctataagcag ggggcgcgct tcgcaaagtg 120

gaggactgtt gttagcatcc cttgtggtcc atctgcatta gcagtcaagg aagcagcatg 180

gggacttgct cgatatgctg ctattgctca ggataatggt ttagtgccaa ttgtggagcc 240

agagattctt cttgatggag accatgggat cga 273

<210> 215
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 215

ggttgacaag ggtttggttc cattgcctgg atccaacaat gaatcatggt gccaaggtct 60

tgatggtttg gcttcaaggt gtgctgagta ctataagcag ggggcgcgct tcgcaaagtg 120

gaggactgtt gttagcatcc cttgtggtcc atctgcatta gcagtcaagg aagcagcatg 180

gggacttgct cgatatgctg ctattgctca ggataatggt ttagtgccaa ttgtggagcc 240

agagattctt cttga 255

<210> 216
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 216

agtttggttc cattgcctgg atccaacaat gaatcatggt gccaaggtct tgatggtttg 60

gcttcaaggt gtgctgagta ctataagcag ggggcgcgct tcgcaaagtg gaggactgtt 120

gttagcatcc cttgtggtcc atctgcatta gcagtcaagg aagcagcatg gggacttgct 180

cgatatgctg ctattgctca ggataatagt ttagtgccaa ttgtggagcc agagattctt 240

cttgatggag accatgggat cgacggagct cttgaggtgg cagagaaagt gtggtctgag 300

gtgtttttct acttagccga 320

<210> 217
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 217

cctttatcaa tcaactacag acggcaagaa gtttgttgac tgcttgaagg atcagaatat 60

catgcctggc atcaaggttg acaagggttt ggttccattg cctggactca acaatgaatc 120

atggtgccaa ggtcttgatg gtttggcttc aaggtgtgct gagtactata agcagggggc 180

gcgcttcgca aagtggagga ctgttgttag catcccttgt ggtccatctg cattagcagt 240

caaggaagca gcatggggac ttgctcgata tgctgctatt gctc 284

<210> 218
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 218

ggagaccctt tatcaatcaa ctacaacggc aagaagtttg atgactgctt gaaggatcag 60

aatatcatgc ctggcatcaa ggttgacaag ggtttagttc cattgcctgg atccaacaat 120

gaatcatggt gccaaggtct tgatggtttt tattcaaggt gtgctgagta ctataagcag 180

ggggcgcgct tcgcaaagtg gaggactgtt gttagcatcc cttgtggtcc atctgcatta 240

gcagtcaagg aagcagcatg gggacttgct cgattgctgc tattg 285

<210> 219
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 219

tttggcttca aggtgtgctg agtactataa gcaggggggcc cgcttcgcaa agtggaggac 60

tgttgttagc atcccttggg gtccatctgc attagctgtg aaggaagcag catggggact 120

tgctcgatat gctgctatcg ctcaggataa tgtcttagtg ccaattgtgg agccagagat 180

ccttcttgat ggagaccatg ggatcgaaag gactctcgag tggcagagaa gtgtggctga 240

ggtgtcttct actgcccaga caatgtc 267

<210> 220
<211> 83
<212> nucleic acid
<213> Zea mays

<400> 220

gtgatggttt ggcttcaagg tgtgctgagt actataagca gggggcgcgc ttcgcaaagt 60

aggccgactg tctgctagca tcc 83

<210> 221
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 221

gttgttttgc agatgagctc atcaagaatg ctgcctacat cggcacccct ggcaagggta 60

tccttgctgc tgatgagtca actggcacca ttggcaagcg cctttccagc atcaatgtcg 120

agaacgtgga ggagaaccgg cgggctctcc gtgagctcct gttctgctgc cctggtgccc 180

tccagtacat cagcggtgtg atcctcttcg aggagaccct ctaccagaag accaaggatg 240

gcaagccttt tgtcgatgtc ctcaaggagg gaggcgt 277

<210> 222
<211> 203
<212> nucleic acid
<213> Zea mays

<400> 222

ggatgatggt tatctttata tttgtatgtt aattagtctc tttgctgtta aatttcgtgt 60

aagttggtcc tgccgatgga gaatcgagca gctccctttt tttgttctat caactatgct 120

gtaattctgg ctatgtatcg gcaaaaacaa ttctatatgc tgagttggag tcggcaaaaa 180

ttcatatatg ctgagttgga gac 203

<210> 223
<211> 158
<212> nucleic acid
<213> Zea mays

<400> 223

ccacctcgcc gcgatctccg tagcctccgt cgcgtcgagc atcgatcatg tcggcctact 60

gcggaaagta caaggatgag ctcatcaagg attgctgcct acattggcac ccctggcaag 120

ggtatccttg ctgctgatga gtccactggc accattgg 158

<210> 224
<211> 93
<212> nucleic acid
<213> Zea mays

<400> 224

cgaccttggc aagcgttgcg ccaagtacta cgaggcaggt gcccgctttg ccaagtggcg 60

cgctgttctc aagattggcc ctaatgagcc atc 93

<210> 225
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 225

gaacaatcca gtgtgcctat cagtgtccac tatgaccacg gcatttccaa gtcagacttg 60

cttcaagctc ttgaagcggg atttgattca gtcatggtgg atggttctca tctaacttta 120

ggggataaca tcttatacac aaagagcata tcttccttgg ctcatgcaaa aggtttactt 180

gtggaagctg agttgggtag gctctcaggc tctgaagatg gcatgaccgt tgaagaatat 240

gaagcaagat ttactga 257

<210> 226
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 226

ctaaagcaag gtggagtccc actggtagca tgttgcattg ctgctgcaga acaatccagt 60

gtgcctatca gtgtccacta tgaccacggc atttccaagt cagacttgct tcaagctctt 120

gaagcgggat ttgattcagt catggtggat ggttctcatc taactttagg ggataacatc 180

ttatacacaa agagcgtatc ttccttggct catgcaaaag gtttacttgt ggaagctgag 240

ttgggtaggc tctcaggctc tgaagatg 268

<210> 227
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 227

cgctgtcctt ctccttcggc cgcgcgctgc agcagagcac cctcaagaag tgggtcggca 60

agaaggagaa cgtcgccgcc gcgcatgcca ccttcgtcat ccgctgcaag gccaactccg 120

aggccgcgct gggcaa 136

<210> 228
<211> 207
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (87)
<223>

<400> 228

ggtggacaag ggccttgtcc cgctcgccgg ctccaacaac gagtcgtggt gccaggggct 60

ggacggcctg gcgtcccgcg aggccgncta ctaccaacaa ggcgcgccgg tccgccaagt 120

gccccaccgt ggcaagaatc cttaacggcc cttccaagtt cgccgtcaag gaggcccctt 180

ggggcttgga acgttaggcc gcctttt 207

<210> 229
<211> 482
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (7)...(10),(27)...(28),(30)...(31)
<223> unsure at all n locations

<400> 229

gtggggnnnn ccgaccccac ctaaacnncn natctctctc cctctccgaa taaccggctg 60

gacccacgcg tccgggcact tgatcagtca aatgcaacat gtggcaagag gttatcatct 120

attggcttgc ggaacacata attgaaccgt caggcttaca ggcagctatt gctgacaact 180

gctgttcttg gtgaatatat cactggcgct attcttttcg aacgagaccc tttatcaatc 240

aactacagac ggcaagaagc ttgttgactg cttgaaagat cagaatatca tgcctggcat 300

caatgttgac aagggtttga ttccattgcc tggatccaac aatgaatcat ggtaccaaag 360

tcttgatggc ttggcttcaa ggcgtgctga ctactataag caggtggcgc gcttcgcata 420

gcgcatgact gttgctagca tccatcgtgg tgcatctgca ttatcagtca atgaatcatc 480

at 482

<210> 230
<211> 414
<212> nucleic acid
<213> Zea mays

<400> 230

gtaaacctca ttatatcatt gcaaagggag gaatcacttc atctgatatt gctacaaagg 60

cgctggaagc taaacgtgcc aaagtcatgg gacaagcatt agctggtgta cccttgtggc 120

agcttggtcc tgagagtaga tttcctgggg tcccttacat tgtttttcct ggtaatgttg 180

gtgataacag tgctcttgct aaagtggtga aaagttgggc ttccccatct agaagttcta 240

caaaagaaat tcttcttgat gcggagaatg gcggttatgc tgttggtgct ttcaatgtgt 300

ataaccttga gggaattgaa gctgttgttg cagcagcaga ggctgaaaag agtcctgcta 360

ttcttcagat tcatccgagt gctctaaagc aaggtggagt cccactggta gcat 414

<210> 231
<211> 355
<212> nucleic acid
<213> Zea mays

<400> 231

attcactata accttgatac ctggtagata gccatgcttt atgcatatcg tattgcagat 60

gagctcatca agaatgctga ctacattggc accccctgaca agggtatcct tgctgctgat 120

gagtccactg gcaccattgg caagcgcctt tccagcatca atgtctagaa cgttgacgag 180

aaccgccgtg ccctccgtga gctcctattc tgctgccctg gtgctctcca gtacatcagc 240

ggtgtgatcc tcttcgagga gaccctgtac cagaagacca aggatggcta gccttctgtc 300

gatgtcctga acgagggagg cgttctccat agcatcaagg ttgacaaggg cacca 355

<210> 232
<211> 154
<212> nucleic acid
<213> Zea mays

<400> 232

gtcctgccga tggagaatcg agcagccctt ttttttgtt ctatcaacta tgctgtaatg 60

ctggctatgt atcggcaaaa acaattctat atgctgagtt ggagtcggca aaaattcata 120

tatgctgagt tggagacagc aacttgtttg gatc 154

<210> 233
<211> 146
<212> nucleic acid
<213> Zea mays

<400> 233

ggaggccatc ttcgtcgacc cggccctccg cgggaagtac tgcgtctgct tcgacccgct 60

ggatggctcc tccaacatcg actgtggtgt ctcaatcgga acggtgtgtc actgtcactc 120

ccggtggtgt ttcaaacctt cttacc 146

<210> 234
<211> 184
<212> nucleic acid
<213> Zea mays

<400> 234

agcatccgaa gaagtactca gctcgctacg tgtgctcact ggtggctgat ttccaccgga 60

cgctcatata tggcggggtc gcatgaaccc aagggaccat ctgcggctgg tttatgaggc 120

gaaccctctc agtttccttg ctgaacaggc tgggggtaga gggtcagatg gcaagatcag 180

aatc 184

<210> 235
<211> 183
<212> nucleic acid
<213> Zea mays

<400> 235

agcgccagca agcgcagcag accaatctcc aacctcacgg gcgttcaggg cgccgtcaat 60

gtgcagggcg aggaccagaa gccgctcgat gtcgtctcca acgaggtgtt ctccaactgc 120

ctcaagtcga gcgggcgcac cggcgtgata cgctcggcgg cggaggacgt gcccgtagcg 180

gtg 183

<210> 236
<211> 342
<212> nucleic acid
<213> Zea mays

<400> 236

tcagctcgag cttctgctcg aggtcagaga caatgacaac gtgaccttag aggatgtgct 60

gcagcctgga acaaacatgc ttgctgctgg ctactgcatg tacggaagtt catgtagact 120

gtgctgagca ctgggaccac atcaatgagt tcactctcga tccttccctt ggagagttca 180

ttttgactca tccagatatc aaggttaatg ataaaaacaa ctcgacactt cttttctatc 240

ctggctgatc gataccccctg gttagcacta taaaacgaaa tggtactact tgagtttggg 300

tatcacgtgt tgtgcgtgct tcgttctttt cttgtgcaga ta 342

<210> 237
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 237

ggaccagaag aagctcgatg tcgtctccaa cgaggtgttc tccaactgcc tcaagtcgag 60

cgggcgcacc ggcgtgatcg cctcggagga ggaggacgtg cccgtagcgg tggagcagag 120

ctactccggc aactacatcg tcgtgttcga ccctctcgac ggctcctcca acatcgacgc 180

cgccgtctcc actggctcca tcttcggcat ctacaacccc aacgacgagt gcctcgccga 240

cgtcgacgac aatgacaccc ttgattcggt ggagcagagg tgcatcgtga acgtgtgcca 300

gccggggag 309

<210> 238
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 238

accagaagaa gctcgatgtc gtctccaacg aggtgttctc caactgcctc aagtcgagcg 60

ggcgcaccgg cgtgatcgcc tcggaggagg aggacgtgcc cgtagcggtg gagcagagct 120

actccggcaa ctacatcgtc gtgttcgacc ctctcgacgg ctcctccaac atcgacgccg 180

ccgtctccac tggctccatc ttcggcatct acaaccccaa cgacgagtgc ctcgccgacg 240

tcgacgacaa tgacaccctt gattcggtgg agcagaggtg catcgtgaac gtgtg 295

<210> 239
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 239

ctcaagtcga gcgggcgcac cggcgtgatc gcctcggagg aggaggacgt gcccgtagcg 60

gtggagcaga gctactccgg caactacatc gtcgtgttcg accctctcga cggctcctcc 120

accatcgacg ccgccgtctc cactgctcca tcttcggcat ctacaacccc aacgacgagt 180

gcctcgccga cgtcgacgac aatgacaccc ttgattcggt ggagcagagg tgcatcgtga 240

acgtgtgcca gccggggagc aacctgctgg ccgccg 276

<210> 240
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 240

tgcagatccc caaggcgggc aagatctacg ccttcaacga gggcaactac gcgctctggg 60

acgacaagct gaagctgtac atggacagcc tcaaggagcc cggcgactcg gggaagccct 120

actccgcgcg gtacataggc agcctcgtcg ggacttcca ccgcactctt ctctacggag 180

ggatctacgg gtaccccagg gacaagaaga gcaagaacgg caagctgcgg cttctctacg 240

agtgcgcccc catgagcttc atcgtcgag 269

<210> 241
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 241

ctcggggaag ccctactccg cgcggtacat aggcagcctc gtcggcgact tccaccgcac 60

tcttctctac ggagggatct acgggtaccc cagggacaag aagagcaaga acggcaagct 120

gcggcttctc tacgagtgcg cccccatgag cttcatcgtg agcaggccgg tggcaagggc 180

tctgacggcc accagagaat tcttgacatc acacctacag agatccacca aagagtgcct 240

ctgtacattg ggagcgtgga ggaagtggac aaggtggaga attcctggct tg 292

<210> 242
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 242

cgcgctctgg gacgacaaac tgaagctgta catggacagc ctcaaggagc ccggcgactc 60

ggggaagccc tactccgcgc ggtacatcgg cagcctcgtc ggcgacttcc accgcactct 120

tctctacgga gggatctacg ggtaccccag ggacaagaag agcaagaacg gcaagctgcg 180

gcttctctac gagtgcgccc ccatgagctt catcgtcgag caggccggtg gcaagggctc 240

tgacggccac cagagaattc ttgacatcac acctaca 277

<210> 243
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 243

cgggtaccca gggacaagaa gagcaagaac ggcaagctgc ggcttctcta cgagtgcgcc 60

cccatgagct tcatcgtcga gcaggccggt ggcaagggct ctgacggcca ccagagaatt 120

cttgacatca cacctacaga gatccaccaa agagtgcctc tgtacattgg cagcgtggag 180

gaagtggaca aggtggagaa attcctggct tgaatgccag agctctctca tcagatggac 240

tcccgaagac atcaagttta gggaggga 268

<210> 244
<211> 324
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (103)
<223>

<400> 244

gagaccgcga gagtgtacgt gccaccagga gcagcagcag caatggccgc cgccgccacc 60

acctcctcat cctcccactt gctcctcctc tcccgccagc agngggcctc cctacgatgc 120

cgcctctcct tcctcggcca gcccagaagg cccggcaggg tcacggccca ggcgccggcc 180

gctaaggacg tgcggtgcat ggcggccgtg gacactactg cggcgtccac ggcggcggcg 240

gagacgagcc ccaagtcgag cagctacgag atcgtgacgc tcacgacgtg gctgctgcag 300

caggagcgga ccggcgcgat cgac 324

<210> 245
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 245

gagagtgtac gtgccaccag cagcagcagc agcagcaatg gccgccgccg ccgccacctc 60

ctcatcctcc cacctgctcc tcctctcccg ccagcaggcg gcctccctac gatgccgcct 120

ctccttcctc ggccagccca gaaggcccgg cagggtcacg gcccaggcgc cggccgctaa 180

ggacgtgcgg tgcatggcgg ccgtggacac tactgcggcg tccacggcgg cggcggagac 240

gagccccaag tcgagcagct acgagat 267

<210> 246
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 246

gtgtacgtgc cacaagcagc agcagcagca gcaatggccg ccgccgccgc cacctcctca 60

tcctcccacc tgctcctcct ctcccgccag caggcggcct ccctacgatg ccgcctctcc 120

ttcctcggcc agcccagaag gcccggcagg gtcacggccc aggcgccggc cgctaaggac 180

gtgcggtgca tggcggccgt ggacactact gcggcgtcca cggcggcgga ggagacgagc 240

cccaagtcga gcagctacga gatcgtgacg ctcacgacgt ggctgctgca gcaagagcgg 300

accggcgcga 310

<210> 247
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 247

ccggaacccc gagtcccgcg gcgacttcac atccttctct cccacatcgt cctcggctgc 60

aagttcgtcg cctccgccgt caacaaggcc gggctcgccc agctgatcgg gctcgccggc 120

gagaccaacg tgcagggaga ggagcagaag aagctggacg tcctgtccaa cgaggtgttc 180

gtcaaggccc tcgtcagcag cggtcgcacc tccgtccttg tgtccgagga ggcgaggaag 240

caacgttcgt ggacc 255

<210> 248
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 248

gggatgtgcc tacagccaaa ttcgtgaaga aatgcaagta tcctgaggat ggttcaccgc 60

ctagatcctt gagatatatc ggaagtatgg ttgctgatgt ccatcgcacc ttactatacg 120

ggggcatatt tttgtaccca gcagaccaga agagtccaaa cgggaaacta cgcgttctgt 180

atgaagtctt cccgatgtca ttcctgatgg aacaagctgg aggccaggct ttcacaggca 240

aacaacgggc ccttgaactt gctcccgcta aacttcacga cagatcccca gtgttcctcg 300

ggagctacga tga 313

<210> 249
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 249

cttgtggtcc ttgtgaatgg tttgcagtat ggttgctgat gtccatcgca ccttactata 60

cgggggcata tttttgtacc cagcagacca gaagagtcca aacgggaaac tacgcgttct 120

gtatgaagtc ttcccgatgt cattcctgat ggaacaagct ggaggccagg ctttcacagg 180

caaacaacgg gcgcttgaac ttgctcccgc taaacttcac gacagatccc cagtgttcct 240

cgggagctac gatgacgttg aggagatcaa ag 272

<210> 250
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 250

caagtatcct gaggatggtt caccgcctag atccttgaga tatatcggaa gtatggttgc 60

tgatgtccat cgcaccttac tatacggggg catatttttg tacccagcag accagaagag 120

tccaaacggg aaactacgcg ttctgtatga agtcttcccg atgtcattcc tgatggaaca 180

agctggaggc caggctttca caggcaaaca acgggcgctt gaacttgctc ccgctaaact 240

tc 242

<210> 251
<211> 384
<212> nucleic acid

<213> Zea mays

<400> 251

agactaaagc atagtatcat cagcaagggg gccccttct gtaccagagc ctcagatcgt 60

gatttcgtca taagccacgc tgaattttat gccgtttcag attcgtggat aagtgcaagt 120

atcctgaaga tggttcaccg cctagatccc tgagatatat cggtagtatg gttgctgatg 180

tccatcgcac cttactagac gggggcatat ttttgtaccc agcagaccag aagagtccag 240

acgggaaact acgcgttctg tatgaagtct tcccgatgtc attcctgatg gaacaagctg 300

gaggccaggc tttcacaggc aaacaaaggg tgtgtttcag tttcccgttc tcagacccca 360

atccccaact gaaaaatctt gatg 384

<210> 252
<211> 337
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (9)...(10),(22),(26)
<223> unsure at all n locations

<400> 252

atggtcttnn ccaggttcac gnacgnatga tcacatcatt gatggaatta ccggactcga 60

cccatcgcgt caggccacgc gtacagcatc tcgctagctt ttcttatgca ttcagatcct 120

ctctctacaa gagaagttct taagcaagat ggaccgcccg gcagacacac acctgactga 180

cctgatgacc atcactcagg tcattcttaa ctaacaaatc ccttacctct attgccgcta 240

ctacttcacc attctgctct accacatcat cctatgctac aagtatatca cctccgtcag 300

tcaacaaggc cgagctctcc cagctcatct gactcac 337

<210> 253
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 253

cccacgcgtc cgcggcgcga tcgacaacga gatgaccatc gtgctggcca gcatatccac 60

ggcgtgcaag cagatcgcgg cgctggtgca gcgcgcgccc atctccaacc tcacgggcgt 120

tcacggcgcc gtcaacgtgc atggcgagga ccagaagaag ctcgatgtcg tctccaacga 180

ggtgttctcc aactgcctca agtcgagcgg gcgcaccggc g 221

<210> 254
<211> 459
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (124),(131),(187),(191),(201),(208),(227),(239),(247),(249),(258),(274),(278),(280),(292),(295),(297),(301),(305),(307),(313),(317),(331),(333),(340),(352),(364),(367),(376),(382),(394)...(395),(407)...(408),(411),(423),(428),(441),(445),(449)
<223> unsure at all n locations

<400> 254

cacgggcgtt cagggcgccg tcaacgtgca gggcgaggac cagaagaagc tcgatgtcgt 60

ctccaacgag gtgttctcca actgcctcaa gtcgagcggg cgcaccggcg tgatcgcctc 120

ggangaggaa ngaacttccc gttacggttg gagcaagaac taactcccgg gaaactaaca 180

atccgtncgt ntttcaacct nctcgaangg ctcctcaaaa atcaacnccg cggttctcna 240

cggggcncna tcttcggnat ctacaacccc aacnattnan tgcctcgccg anttnancaa 300

naatnanacc ctnaatncgt tgaacaaaag ntnaatcttn aacttttgca anccggggaa 360

ccanctngct ggcccnccgg gnaactgcat ttanncaacc tcggtgnntt ntccggctaa 420

ccnttggnac cgggggttta ncttntttna cctggaccc 459

<210> 255
<211> 422
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (390),(410)
<223> unsure at all n locations

<400> 255

ccatcgtgct ggccagcata tccacggcgt gcaagcagat cgcggcgctg gtgcagcgcg 60

cgcccatctc caacctcacg ggcgttcagg gcgccgtcaa cgtgcagggc gaggaccaga 120

agaagctcga tgtcgtctcc aacgaggtgt tctccaactg cctcaagtcg agcgggcgca 180

ccggcgtgat cgcctcggag gaggaggacg tgcccgtagc ggtggagcag agctactccg 240

gcaactacat cgtcgtgttc gaccctctcg atggctcctc caacatcgac gccgccgtct 300

ccactggctc catcttcggc atctacaacc ccaacgatga gtgcctcgcc gacgtcgacg 360

acaatgacac ccttgattcg ggtggagcan aggtgcatcg tgaacgtgtn ccaaccgggg 420

ga 422

<210> 256
<211> 419
<212> nucleic acid
<213> Zea mays

<400> 256

ctcaagtcga gcgggcgcac cggcgtgatc gcctcggagg aggaggacgt gcccgtagcg 60

gtggagcaga gctactccgg caactacatc gtcgtgttcg accctctcga cggctcctcc 120

aacatcgacg ccgccgtctc cactggctcc atcttcggca tctacaaccc caacgacgag 180

tgcctcgccg acgtcgacga caatgacacc gtgagtgcta attaatctca tctcccttac 240

cttctttctg ttctgactgg ctcattacgt gacaattcta tctccaacac tacactacgt 300

acgtacgcgc gcgcagcttg attcggtgga gcagaggtgc atcgtgaacg tgtgccagcc 360

ggggagcaac ctgctggccg ccggctactg catgtactcg agctcggtga tcttcgtgc 419

<210> 257
<211> 430
<212> nucleic acid
<213> Zea mays

<400> 257

gaccgcgaga gtgtacgtgc caccaggagc agcagcagca atggccgccg ccgccaccac 60

ctcctcatcc tcccacttgc tcctactctc ccgccagcag gcggcctccc tacgatgccg 120

cctctccttc ctcggccagc ccagaaggcc cggcagggtc acggcccatg cgccggccgc 180

taaggacgtg cggtgcatgg cggccgtgga cactactgcg gcgtccacgg cggcggcgga 240

gacgagcccc aagtcgagca gctacgagat cgtgacgctc acgacgtggc tgctgcaaca 300

ggagcggacc ggcgcgatcg acaacgagat gaccatcgtg ctggccagca tatccacggc 360

gtgcaagcag atcgcggcgc tggtgcagcg cgcgcccatc tacaacctga cgggcgttca 420

gggcgccgtc 430

<210> 258
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 258

accacgcgtc cgcccacgcg tccgagtgga caaggtggag aaattcttga catcacacct 60

acagagatcc accaaagagt gcctctgtac attgggagcg tggaggaagt ggacaaggtg 120

gagaaattcc tggcttgaat gtccctgctt catgccagag ctctctcatc agatggactc 180

cccaagacat caagtttagg gagggaatat gtactctctc tttcccaccc caaataagtc 240

ttcttcgtct catatttcga taaatcaaac aatctcaatt ttgatctaat atatacacac 300

aacattaata ttt 313

<210> 259
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 259

gctgcgtcgt gccttcgcag cacgaatcgc tggatttcaa gtttgttttg aagcgaaaag 60

gtgataatcc tcaatacatt attgaggagg gacctaaccg accattgggt tgccagagaa 120

atgaatttga gatggggaat gcgttgttta aactcaacga agggaaggag gtacttgagt 180

gcaaggttca ggttgagaca gaaatgttat ccccaattga cttggcggct agttggagag 240

ctcatcagga gtattttcag ccttcaaggg tgcgggggac tcacgatgtc actatc 296

<210> 260
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 260

caaaaggggc tgttcgttga caggggtgtt ggctcttcta tgcttccaaa atcagccagt 60

gcatgctcct tggcatctgg gtttagtttt ggatcagcaa agacaatgcc agaagcagca 120

ggagctgttg cagctgcagc tgtagctgat cgtttgcatg ggtcaaagga ggaccggaag 180

ctggccattg ttttggttgg cctaccagct cgtggtaaaa ccttcactgc agttaagctt 240

acaaggtacc ttcgttggtt gggccatgaa actagacatt tcaatgttgg gaagtatc 298

<210> 261
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 261

gcgccctcgc catggaaagg gagctcgcgt ccatgtgggt gctcagcttc gtcgtgccgc 60

cggaccatga aacactggac ttcaagttct tgctgaagcc caaagacgct gaaaccccgt 120

gcatcatcga ggaaggaccc acacggctcc tcaccggagg catgctagag ggtgatgtga 180

gggttgcact gttcaagctc aatggagatg atgaggtgct cgagtttggg gtggtcaaca 240

aggcggacct tgtatcaccg cttgaacttg ctgcaagctg gagggtgtac aaggagaact 300

ttcagccttc caaagttcgg gggat 325

<210> 262
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 262

cccacgcgtc cgagtgtgtg atgggatgac ttatgaagag ataaagaaaa tcatgcccga 60

ggaatttgag tcacgaaaga aggacaagct aagataccgc tacccccgtg gagaatctta 120

cctcgatgtg atacagaggc tggaacccgt catcatcgag ctagaacgcc agcgtgcacc 180

agtggttgtc atatctcatc aggctgtact gcgagcactg tatgcatatt tcgcggaccg 240

tcctt 245

<210> 263
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 263

cccacgcgtc cgcaacaaag tcctgattat gcagagcaaa cagattttga agctggtgta 60

caagatttca aagagcgatt gacctattat gaaaaggtct atgaaccggt ggaagaaggt 120

tcttacataa aaatgattga catggttagt gggaaggggg gccaactaaa gattaatgac 180

ataagtggtt acttgcctgg acggatcgtt ttcttcttgg gtaactgtca tctgacacct 240

cgtcctatcc tgctaacaag acatggtg 268

<210> 264
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 264

aaactcaacc ggagatggcg agctctggcg gaatctccga ccagctcttc gtctccgtca 60

agttagagag cccgcacctc gcggagctcg acctcgcccc ccacctcttc ggctcccacc 120

ctgtggctgg ctcgtgggac ccctgcaagg ccctgccttt ggagcgggcg gccaccgccg 180

tgtgggagtt cagctgcgtc gtgccttcgc agcacgaatc gctggatttc aagtttgttt 240

tgaagcgaaa aggtgataat cctcaataca ttattgaggg 280

<210> 265
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 265

cttgtcccta ggttggtata tttgacgcaa caaacagcac aagaaagcga agatatatgc 60

taatgaaaat ggctgaaggt aactgtaaga ttatattttt ggagacaata tgtaatgatc 120

caaacataat tgaaagaaac atacggctga agatccaaca aagtccagac tatgctgaac 180

agctagatta tgaagctgga ctggaggact tcaaggaacg tttgattaat tatgaaaagg 240

tctacgagcc agtaggggaa ggttcttaca tcaaaatgat tgacatggta aaggggcaag 300

at 302

<210> 266
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 266

ggaagaatcg gtggagactc ttctttgagt gaggccggtg agctttattc aaggaagctt 60

gcgagctttg tggagaagcg actgaaatcc gagcggactg cctctatatg gactagcaca 120

ctccagagaa caatattaac agcacatcgg atcattggat ttccaaagat acaatggcgt 180

gctcttgatg agatcaatgc tggggtctgt gatgggatga catacgatga aataaagaaa 240

agtaaacctg aagaatatga atcacgaaga taagacaagc tgaggtatcg ttatccgaga 300

gggagatcct atct 314

<210> 267
<211> 320
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (276)
<223>

<400> 267

ctcatgtaga tgcgactaca caccatagtc gagatacaaa tgggcgtcac gggtgtggaa 60

gagaagaggt acaaactcat ggactgagtg agtacatagg agcagctact tgggtgtgtc 120

atacatcgag tacacataac acagaagcgt ttgcccttct ctctctctcc acacggtgtt 180

cagtgtaatt gctctggaaa agagacatgt tgaacattgt aaaggaaaaa ctaataaggg 240

actgtaaaag tggcatgcgt actgtaacgg ataagngata cagactgggg tgctcaatgc 300

ttattcagag catattcgtc 320

<210> 268
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 268

gtgatgggat gacatacgat gaaataaaga aaagtaaacc tgatgaatat gaatcacgta 60

gaaaagacaa gctgaggcat cgttatccga gaggagaatc ctatcttgac gtcattcaaa 120

gactagaacc tgtgataatt gaacttgaac gacagcgtgc tccagttgta gtcatagctc 180

accaggctgt gttgagagca ctttatgcat actttgcgga caaaccgctt gaggaagtcc 240

caaatattga gatacctgta catac 265

<210> 269
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 269

ggtcagttac aggtaaataa tatcagcggt tatctccctg ggaggattgt cttcatcttg 60

gtgaactctc atcttacacc acgacctatt ttgcttacca ggcatggtga gagtttacat 120

aatgttagag gaagagtcgg tggtgataca gttctaagtg aaactggcga actttatgca 180

aagaaactag ccaactttat agaaaagcgg ctcaaatgtg agaaaacagc aactatatgg 240

accagtaccc ttc 253

<210> 270
<211> 260
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (231)
<223>

<400> 270

gaaaaggtct acgagccagt aggggaaggt tcttacatca aaatgattga catggtaaag 60

gggcaagatg gtcagttaca ggtaaataat atcagcggtt atctccctgg gaggattgtc 120

ttcttcttgg tgaactctca tcttacacca cgacctattt tgcttaccag gcatggtgag 180

agtttacata atgttagagg aagagtcggt ggtgatacag ttctaagtga nactggcgaa 240

ctttatgcaa agaaactagc 260

<210> 271
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 271

cgggtgtgga agagaagagg tacaaactca tggactgaat gaatacataa aagcagctgg 60

ttggctgttt catacagcaa gtacacataa cacagaagcc ttttcccttc tctctctctc 120

tccacacggt gttcagtgta atttctttgg aaaaaagaca tgttgaacat tgtaaagaaa 180

aaactaataa ggaactgtaa aaatggcatg cttactgtaa cgaataggga atacagactg 240

ggg 243

<210> 272
<211> 400
<212> nucleic acid
<213> Zea mays

<400> 272

ccgactcgta cgtcatgcaa caaaaccctt taatgatgga aagtacctcc cggttcaggt 60

gggacctata aactggttat tttttcgcga ctacaggaag gtgtggaagt acttcacgaa 120

gttgattgct tagcaactgg aagatatgct atcattgatg cactaaggtg gaacgttgga 180

attatcgatg ccacatacag cacacgaata ccgaagaaca tgctgatgaa aatggctgaa 240

ggaaaatgtc agatcatatt tctgtgaaca ctatgtaatg accaacatgt tcttgagaga 300

actatacaat cgaaagttca acaaagacct gactatgcat agcatacaga atatgaagct 360

ggcgtacaag atttcaaata ccgattggcc tattatgaaa 400

<210> 273
<211> 454
<212> nucleic acid
<213> Zea mays

<400> 273

gacctttaca gcagctaaac ttacaagata tctccgatgg ttaggtcatg aaacaaaaca 60

cttcaatgtt ggaaagtacc gccggctcaa gcatggaact aatcagactg ctgatttctt 120

tcgtggagat aacagggagg gtgtggaggc acgtaacgag gtggctgcat tagcaatgga 180

agatatgcta tcttggatgc aggagggtgg tcaggttggt attttcgatg ccacaaacag 240

cacaagaata cggaggaaca tgctgatgaa aatggctgaa ggaaaatgta agatcatctt 300

tttggaaaca ttatgtaatg accaagatgt tcttgagaga aatatacgat tgaaagttca 360

acaaagtcct gattatgcag agcaaacaga ttttgaagct ggtgtacaag atttcaaaga 420

gcgattgacc tattatgaaa aggtctatga accg 454

<210> 274
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 274

atggggaatg cgttgtttaa actcaacgaa tggaaggagg tacttgagtg caaggttgag 60

gtggagacag aaatgttatc cccatttgac ttggcggcta gttggagagc tcatcaggag 120

tattttcagc cttcaagggt gcgagggact cacgatgtca ctatcaaccc tgggttagaa 180

ggcagggcca agaatggctt cgcttctggt ttgaagcttg atttagacaa gtatgtagtt 240

ccaacaccaa acatgggctc aggtgttgtt tatgcagcta gtttgactga aaatccacgc 300

tcattattgc aaactgcgag ttcctcatac aatgatacca caaaggacat tttgcacaac 360

tcaactaaag gcgattcatc cttgaatcac tatgttaaca ctatgaagag cacaattgga 420

gggcatgcat cgtcactgga ag 442

<210> 275
<211> 403
<212> nucleic acid
<213> Zea mays

<400> 275

atgtatgcat atttcgcagt ccgtcctttg agagaagttc cagagataca gatgccacta 60

gacaccataa tcgagataca aatgggcgtc actggtgtgg aagagaagag gtacaaactc 120

atggactgaa tgaatacata aaagcagctg gttggctgtt tcatagagca agtacacata 180

acatagaagc cttttccctt ctcactctct ctccacacgg tgttcattgt aatttctttg 240

gaaaaaagac atgttgaaca atgtaaacaa acaactaata acgaactgta cgaatggcat 300

gcttactgta acgaataacg aatacatact gggggtcacc aatgcgtagt cagaaacata 360

ttccgtcaaa gaacatagcg aaatgctgca gaagaaacgc ccg 403

<210> 276
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 276

gatttattga caacaccgat cctgctggga ttgatcatca aattgctcaa ctaggacctg 60

aactggcaac tactcttgta attgtcattt ctaagagcgg aggcacacct gaaacccgca 120

atggtctact agaagtacag aaagccttca gagatgcggg gctgcaattc tcgaaacagg 180

gtgttgcaat tactcaagaa aattctctgt tggataacac tgctagaata gagggatggt 240

tagctcggtt tcctatgttt gattgggttg gtggtaggac ttcagaaatg tctgctgtgg 300

<210> 277
<211> 208
<212> nucleic acid
<213> Zea mays

<400> 277

cgccaacccc gacgagggtc gcatggtggg ccactactgg ctccgcgacc cggccctcgc 60

tcccaactcc ttcctccgga acaagatcga gaccgcactc gacaaaatcc tcgccttctc 120

ccaagatgtc atctctggaa agattctttc cccatctggt cgtttcactt caattctctc 180

tataggaatc ggagggtcag ctttgggc 208

<210> 278
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 278

cccacgcgtc cgataacact gccagaatag agggatggtt agctcggttt cctatgtttg 60

actgggttgg tggtaggact tcagaaatgt cagctgttgg tttacttcca gctgcattgc 120

agtgtattga tatcaaggaa atgctatttg gtgcagcttt aatggatgag gaaacccgga 180

acactgtggt taaagcaaat ccagcagcat tgcttgcatt atgttggtat tgggcatcgg 240

aagggatagg caaaaaggat atggttg 267

<210> 279
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 279

agcttctcgc ttttttaacc acagttgtca acctaactgt cggctggaga aatggaatca 60

gagggtctgc ttatgggcct caatttgttg ctaaaccact tgcacctgat aaccctccac 120

tgaaggtaag atttattgac aacatcgatc ctggtgggat tgatcatcaa attgctcaac 180

taggatctca actggcaact agctactctt gtaattgtca tttctaagaa cacttgaggg 240

agggggaact gctgaagc 258

<210> 280
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 280

gcagaatgtg aacagggcca caactgggat tccttgaaat gttgatccag ttgacgttgc 60

acgaagcatt aaagatttgg atccagaaac cactctggtg gtggctgtat caaagacatt 120

cacaacagct gaaacaatgt taaatgctcg aactcctaag gagtggatcg tttcttctct 180

tgggacacag gctgttgcca tacatatgat tgctgtcagc actaatctt 229

<210> 281
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 281

aggttggaca gcttttatcc atctatgagc accggattgc agttcagggc ttcatatggg 60

gaattaactc atttgaccca tggggagtgg acctagggaa gtcactcgct tctcaagtga 120

ggaaacagct gcatggaacc cggatggaag gaaagcctgt tgagggtttt aaccacagca 180

cttcaagttt gcttgcacga tatcttgctg tcaagccatc caccccgtat gatactaccg 240

tgctgccgaa ggtgtaatta ctcagttgtt tttgacatgc caattgctga gctctgactt 300

ggcaaggttg agcataagtc tttcttcatt ttgggag 337

<210> 282
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 282

gcggggctgc aattctcgaa acagggtgtt gcaattactc aagaaaattc tctgttggat 60

aacactgcta gaatagaggg atggttagct cggtttccta tgtttgattg ggttggtggt 120

aggacttcag aaatgtctgc tgtgggttta cttccagctg cattgcaggg tattgatatc 180

aaggaaatgc tagctggtgc agctttaatg gatgaagaaa cccggaacac tgtggttaaa 240

gaaaatcc 248

<210> 283
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 283

gttgcaatca ctcaagaaaa ttctctgttg gataacactg ccagaataga gggatggtta 60

gctcggtttc ctatgtttga ctgggttggt ggtaggactt cagaaatgtc agctgttggt 120

ttacttccag ctgcattgca gggtattgat atcaaggaaa tgctagttgg tgcagcttta 180

atggatgagg aaacccggaa cactgtggta tcacattatt aataacacgg acaacttgca 240

gtgatggcat gattatctat atgtgtcatg tcaacatgtt tatctttt 288

<210> 284
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 284

tgatgcgggt ctgcaattct cgaaacaggg tgttgcaatc actcaagaaa attctctgtt 60

ggataacact gccagaatag agggatggtt agctcggttt cctatgtttg actgggttgg 120

tggtaggact tcagaaatgt cagctgttgg tttacttcca gctgcattgc agggtattga 180

tatcaaggaa atgctagttg gtgcagcttt aatggatgag gaaacccgga acactgtggt 240

taa 243

<210> 285
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 285

cagaaagcct tcagagatgc agggctgcaa ttctcgaaac agggtgttgc aattactcaa 60

gaaaattctc tgttggataa cactgctaga atagagggat ggttagctcg gtttcctatg 120

tttgattggg ttggtggtag gacttcagaa atgtcagctg tgggtttact tccagctgca 180

ttgcagggta ttgatatcaa ggaaatgcta gctggtgcag ctttaatgga tgagg 235

<210> 286
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 286

cgacagaatc ctcgccttct ctcaagatgt cgtctctgga aagattcttt ccccatctgg 60

tcgtttcact tcaattctct ctataggaat cggagggtca gctttgggcc ctcaatttgt 120

tgctgaggca cttgcgcctg ataaccctcc actgaagata agatttattg acaacaccga 180

tcctgctggg attgatcatc aaattgctca actaggacct gaactggcaa ctactcttgt 240

aattgtcatt tctaagagcg gaggcacacc tgaaacccgc aatgggctac tggaag 296

<210> 287
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 287

gaaagattct ttccccatct ggtcgtttca cttcaattct ctctatagga atcggagggt 60

cagctttggg ccctcaattt gttgccgagg cacttgcacc tgataaccct ccactgaaga 120

taagatttat tgacaacaca gatcctgctg ggattgatca tcaaattgct caactaggac 180

ctgaactggc aactactcgt gaaagtgaca tttctaagag cggcggca 228

<210> 288
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 288

cccacgcgtc cgccgcactc gacagaatcc tcgccttctc tcaagatgtc gtctctggaa 60

agattctttc cccatctggt cgtttcactt caattctctc tataggaatc ggagggtcag 120

ctttgggccc tcaatttgtt gctgaggcac ttgcgcctga taaccctcca ctgaagataa 180

gatttattga caacaccgat cctgctggga ttgatcatca aattgctcaa ctaggacctg 240

aactggcaac tactcttgta attgtcattt ctaagagcgg aggcacacct gaaacccgca 300

atgg 304

<210> 289
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 289

ctttatgcaa atgaccggga gtctatctct gttactgtgc aagaggtaac tcctagagct 60

gttggagcac tgattgcact ttatgaacgt gctgtgggga tttatgcttc tttggtaaat 120

atcaatgcct atcatcagcc tggtgttgag gctgggaaaa aggcagcagg agaagtattg 180

gcccttcaga aaagggttct gactgtatta aaggaggcca tctgcgagaa ccctactgag 240

ccattgactc tagatgaaat tgcagatcgc tgc 273

<210> 290
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 290

ctatcatcaa cctggtgttg aggctgggaa aaaggcagca ggagaagtgt tggcccttca 60

gaaaagggtg ctgactgtat taaatgaggc aacctgcaag gacccttgtg agccattgac 120

tatagatgaa attgcagatc gctgccattg ccctgaagat attgagatga tctacaaaat 180

agtccagcac atggctgcta acgacagagc aatcatagca gaaggcagct gtggctctcc 240

tcgcagcgtt aaggtgtacc tcggtgaatg caatgtagac gaagacttgc aggccgcgta 300

ggttccgagc ctggatccgt gt 322

<210> 291
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 291

atcaacctgg tgttgaggct gggaaaaagg cagcaggaga agtgttggcc cttcagaaaa 60

gggtgctgac tgtattaaat gaggcaacct gcaaggaccc ttgtgagcca ttgactatag 120

atgaaattgc agatcgctgc cattgccctg aagatattga gatgatctac aaaatagtcc 180

agcacatggc tgctaacgac agagcaatca tagcagaagg cagctgtggc tctcctcgca 240

gcgttaaggt gtacctcggt gaat 264

<210> 292
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 292

cggacgcgtg gtttgagtag atatttgcaa caacttgtca tggaatctct tggaaaagaa 60

ttcgacctgg atggcaaccg tgttaatcaa gggctaactg tatatggtaa caaaggaagc 120

actgaccagc atgcttacat tcagcagctg agagaaggtg tacaaaactt ctttgttacg 180

tttattgagg tcttgcgtga caggcctgct ggacatgatt ggagacttga acctggagtc 240

acgtgtggtg actatttgtt tgggatgttg cagggaaccc gttctgctct ttatgcaaat 300

gaccgggagt 310

<210> 293
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 293

gttgcttttg agtagatatt tgcaacaact tgtcatggaa tctcttggga aagaatttga 60

tctggatggc aaccgggtaa atcaagggct atctgtatat ggaaacaaag gaagtactga 120

ccagcacgct tacattcagc agctgagaga aggtgtacac aacttctttg ttacttttat 180

cgaggtcttg cgtgacaggc ctgctggtca tgattgggag cttgaacctg gagtcacatg 240

tggtgactat ttgtttggga tgttgcaggg aacacgttct gctctttatg caaat 295

<210> 294
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 294

acaaaggaag cactgaccag cacgcttaca ttcagcagct gagagaaggt gtacacaact 60

tctttgttac ttttatcgag gtcttgcgtg acaggcctgc tggtcatgat tgggagcttg 120

aacctggagt cacatgtggt gactatttgt ttaggatgtt gcagggaaca cgttctgctc 180

tttatgcaaa tgaccgtgaa tctatctctg ttactgtgca agaggtaact cctagagctg 240

ttggagcact ggttgcactt tatgaacgtg ctgtggggct ttatgcttct ttg 293

<210> 295
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 295

ggtgtacaaa acttctttgt tacgtttatt gaggtcttgc gtgacaggcc tgctggacat 60

gattgggagc ttgaacctgg agtcacgtgt ggtgactatt tgtttgggat gttgcaggga 120

acccgttctg ctctttatgc aaatgaccgg gagtctatct ctgttactgt gcaagaggta 180

actcctagag ctgttggagc actgattgca ctttatgaac gtgctgtggg gatttatgct 240

tctttggtaa atatcaatgc ctatcatcag cctggtgttg a 281

<210> 296
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 296

ccggaacact gtggttaaag aaaatccagc agcattgctt gcattatgtt ggtattgggc 60

atcagaaggg ataggcaata aggatatggt tgtacttcct tacaaggata gtttgttgct 120

tttgagtaga tatttgcaac aacttgtcat ggaatctctt gggaaagaat ttgatctgga 180

tggcaaccgg gtaaatcaag ggctatctgt atatggaaac aaaggaagca ctgaccagca 240

cgcttacatt cagcagctga gag 263

<210> 297
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 297

cggacgcgtg gtgctagctg gtgcagcttt aatggatgag gaaacccgga acactgtggt 60

taaagaaaat ccagcagcat tgcttgcatt atgttgctat tgggcatcag aagggatagg 120

caataaggat atggttgtac ttccttacaa ggatagtttg ttgcttttga gtagatattt 180

gcaacaactt gtcatggaat ctcttgggaa agaatttgat ctggatggca accgggtaaa 240

tcaagggcta tctgtatatg gaaacaaagg aagcactgac cagcacgctt acattcagca 300

<210> 298
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 298

cccacgcgtc cgcccacgcg tccggggtat tgatatcaag gaaatgctag ctggtgcagc 60

tttaatggat gaagaaaccc ggaacactgt ggttaaagaa aatccagcag cattgcttgc 120

attatgttgg tattgggcat cagaagggat aggcaataag gatatggttg tacttcctta 180

caaggatagt ttgttgcttt tgagtagata tttgcaacaa cttgtcatgg aatctcttgg 240

gaaagaattt gatctggatg gcaaccgggt aaatcaaggg ctatctgtat atggaaacaa 300

aggaagtact gac 313

<210> 299
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 299

gatagtttgt tacttttgag tagatatttg cctatccctt ccgatgccca ataccagcag 60

cattgcttgc attatgttgg tattgggcat cggaagggat aggcaaaaag gatatggttg 120

tgcttcctta taaggatagt ttgttacttt tgagtagata tttgcaacaa cttgtcatgg 180

gatctcttgg aaaagaattc gacctggatg gcaaccgtgt taaacaaggg ctaactgtat 240

atggtaacaa aggaagcact gaccagcatg cttacattca gcagctgaga gaaggtgt 298

<210> 300
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 300

gaggtcttgc gtgacaggcc tgctggtcat gattgggagc ttgaacctgg agtcacgtgt 60

ggtgactatt tgtttgggat gttgcaggga acccgttctg ctctttatgc aaatgaccgg 120

gagtctatct ctgttacgtg caagaggtaa ctcctagagc tgttggagca ctgatttcac 180

tttatgaacg tgctgtgggg atttatgctt ctttggtaaa tatcaatgcc tatcatcagc 240

ctggtgttga ggctgggaaa aaggcagcag gaga 274

<210> 301
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 301

cagctgcatt gcagggtatt gatatcaagg aaatgctagc tggtgcagct ttaatggatg 60

aggaaacccg gaacactgtg gttaaagaaa atccagcagc attgcttgca ttatgttggt 120

attgggcatc agaagggata ggcaataagg atatggttgt acttccttac aaggatagtt 180

tgttgctttt gagtagatat ttgcaacaac ttgtcatgga atctcttggg aaagaatttg 240

atctggatgg caaccgggta aatcaaggct atctgtatat ggaa 284

<210> 302
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 302

cggacgcgtg gtgctagctg gtgcagcttt aatggatgag gaaacccgga acactgtggt 60

taaagaaaat ccagcagcat tgcttgcatt atactggtat tgggcatcag aagggatagg 120

caataaggat atggttgtac ttccttacaa ggatagtttg ttgcttttga gtagatattt 180

gcaacaactt gtcatggaat ctcttgggaa agaatttgat ctggatggca accgggtaaa 240

tcaagggcta tctgtatatg gaaacaaagg aagcactgac cagcacgctt acattcagca 300

gctgag 306

<210> 303
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 303

cccacgcgtc cgcccacgcg tccgcccacg cgtccgcgag gtcttgcgtg acaggcctgc 60

tggtcatgaa tgggagcttg aacctggagt cacatgtggt gactatttgt ttgggatgtt 120

gcagggaaca cgttctgctc tttatgcaaa tgaccgtgaa tctatctctg ttactgtgca 180

agaggtaact cctagagctg ttggagcact ggttgcactt tatgaacgtg ctgtggggct 240

ttatgcttct ttggtaaata tcaatgccta t 271

<210> 304
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 304

cggacgcgtg ggggtgtaca caacttcttt gttacgttta ttgaggtctt gcgtgacagg 60

cctgctggtc atgattggga gcttgaacct ggagtcacgt gtggtgacta tttgtttggg 120

atgttgcagg gaacccgttc tgctctttat gcaaatgacc gggagtctat ctctgttact 180

gtgcaagagg taactcctag agctgttgga gcactgattg cactttat 228

<210> 305
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 305

tggtgtacac aacttctttg ttacttttat cgaggtcttg cgtgacaggc ctgctggtca 60

tgattgggag cttgaacctg gagtcacatg tggtgactat ttgtttggga tgttgcaggg 120

aacacgttct gctctttatg caaatgaccg tgaatctatc tctgttactg tgcaagaggt 180

aactcctaga gctgttggag cactggttgc actttatgaa cgtgctgtgg ggctttatgc 240

ttcttggtaa atatcaatgc tatcatcaac tggtg 275

<210> 306
<211> 203
<212> nucleic acid
<213> Zea mays

<400> 306

tgttgtactt ccttacaagg atagtttgtt gcttttgagt agatatttgc aacaacttgt 60

catggaatct cttgggaaag aatttgatct ggatggcaac cgggtaaatc aagggctatc 120

tgtatatgga aacaaaggaa gcactgacca gcacgcttac attcagcagc tgagagaagg 180

tgacacaact tctttgttac ttt 203

<210> 307
<211> 285
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (151)
<223>

<400> 307

gttgtcaggg tattgatatc aaggaaatgc tagctggtgc agctttaatg gatgaagaaa 60

cccggaacac tgtggttaaa gaaaatccag cagcattgct tgcattatgt tggtattggg 120

catcagaagg gataggcaat aaggatatgg ntgtacttcc ttacaaggat agtttgttgc 180

ttttgagtag atatttgcaa caacttgtca tggaatctct tgggaagaat tgatctggat 240

gcaaccggta aatcaaggct atctgatatg aaacaaagaa gactg 285

<210> 308
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 308

tatcttgctg tcaagccatc caccccgtat gatactaccg tgctgccgaa gtgtaattac 60

tcagttgttt ttgacatgcc aattgctgag ttctgacttg gcaaggttga gcataagtct 120

ttcttcattt tgggagttat cacagagcca gtttggcagt gctgtagttt tggttttacc 180

tactctttgt agaagaaaag tgaagagtgg atattatgga acaaaatata tacctacggc 240

agcacgcagc atgatgaaac atattta 267

<210> 309
<211> 240
<212> nucleic acid

<213> Zea mays

<400> 309

gtctcccccg accggcgatc gctatcgact tgtagcggaa gccatggcgt cggcagcgct 60

aatctgcggc acggagcagt ggaaggccct ccaggcgcac gtcggcgcga ttcagaagac 120

gcacctgcgc gacctgatgg ccgacgccga ccgatgcaag gcaatgacgg ctgagtatga 180

agggatcttt ctggattact cgagacagca ggcgactggt gaaacatgga gaagccctta 240

<210> 310
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 310

caaaatccgg aggaactccc aggaggcgaa aagcagatcc gtctcccccg agccccgacc 60

ggcgatcgct atcgacttgt agcggaagcc atggcgtcgg cagcgctaat ctgcggcacg 120

gagcagtgga aggccctcca ggcgcacgtc ggcgcgattc agaagacgca cctgcgcgac 180

ctgatggccg acgccgaccg atgcaaggca atgacggctg agtatgaagg gatctttctg 240

gattactcga gacagcaggc gactggtgaa acatggagaa gctcttaaat tg 292

<210> 311
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 311

ggcaagcaaa cgagcggcgg gacggctagc ccgcaataca aaatccggag gaactcccag 60

gaggcgaaaa gcagatccgt ctcccccgag ccccgaccgg cgatcgctat cgacttgtag 120

cggaagccat ggcgtcggca gcgctaatct gcggcacgga gcagtggaag gccctccagg 180

cgcacgtcgg cgcgattcag aagacgcacc tgcgcgacct gatggccgac gccgaccgat 240

gcaaggcaat gacggctgag tatgaaggga tctttctgga ttactcgaga cagcaggcga 300

ctggtgaaac catggagaag 320

<210> 312
<211> 278
<212> nucleic acid

<213> Zea mays

<400> 312

caccgtcttc cggccgtcca ccgtttccag cacacagggt aaaggcaagc aaacgagcgt 60

ggggacggct agcccgcaat acaaaatccg gaggaactct caggaggcga aaagcagatc 120

tgtctccccc gaccggcgat cgctatcgac ttgtagcgga agccatggcg tcggcagcgc 180

taatctgcgg cacggagcag tggaaggcac tccaggcgca cgtcggcgcg attcagaaga 240

cgcaactgcg cgacctgatg gccgacgccg accgatgc 278

<210> 313
<211> 105
<212> nucleic acid
<213> Zea mays

<400> 313

caaaatccgg aggaactccc aggaggcgaa aagcagatcc gtctcccccg agccccgacc 60

ggcgatcgct atcgacttgt agcggaagcc atggcgtcgg cagcg 105

<210> 314
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 314

acccgatcaa gctgtgggag cgctacgtcg agtggctcta ccagcacaag gagctcggca 60

tcttcgtcga cgtcagccgg atggggttca cggaggagtt cctgcggcag atggagccgc 120

ggatgcagca ggccttcgtc gacatgcggg agctcgagaa gggcgccatc gccaaccccg 180

acgagggtcg catggtgggc cactactggc tccgcgaccc ggccctcgct cccaactcct 240

tcctccggaa caagatcgag accgcac 267

<210> 315
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 315

tgccatattc tcaggcactt gagaagttgg caccacatat acagcagctt agcatggaga 60

gtaacgggaa gggtgtttcc attgatggcg cccaactttc ctttgagaca ggtgaaattg 120

attttggtga acctcgaact aatggccagc acagcttcta tcaattaatc catcagggaa 180

gggttatccc ttgcgacttt attggtgttg ttaaaagtca gcagcctgtt tacttgaaag 240

gggaaactgt gagtaatcat gatgagctta tgtccaattt ctttgcccaa cctgatgctc 300

ttgcttatgg aaagactcct gaaca 325

<210> 316
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 316

tccagctagg gcaatattgc catattctca ggcacttgag aagttggcac cacatataca 60

gcagcttagc atggagagta acgggaaggg tgtttccatt gatggcgccc aactttcctt 120

tgagacaagt gaaattgatt ttggtgaacc tggaactaat ggccagcaca gcttctatca 180

attaatccat cagggaaggg ttatcccttg cgactttatt ggtgttgtta aaagtcagca 240

gcctgtttac ttgaaagggg aaactgtgag taatcatgat gagcttatgt ccaatttctt 300

tgcccaacct gatgct 316

<210> 317
<211> 300
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (24)
<223>

<400> 317

atcaaagaca ttcacaacag ctgnaaacaa tgttaaatgc tcgaactctt aaggagtgga 60

tcgtttcttc tcttgggcca caggctgttg ccaaacatat gattgctgtc agcactaatc 120

ttaagcttgt gaaggagttt ggaattgacc caaacaatgc ttttgccttt tgggactggg 180

ttggcggccg ttatagtgtt tgcagtgctg ttggcgttct gccattatct cttcagtatg 240

gctttccaat tgtccagaaa tttttggagg gagcttccag tatcgacaac cacttctact 300

<210> 318
<211> 334
<212> nucleic acid
<213> Zea mays

<400> 318

ctcatgatga gcttatgtcc aatttctttg cccaacctga tgctcttgct tatggaaaga 60

ctcctgaaca gttgcacagt gagaaagttc cagataatct tatccctcat aagactttta 120

agggcaaccg gccatcacta agtttgcttc tgcctacact atctgcatat gaggttggac 180

agcttttatc catctatgag caccggattg cagttcaggg cttcatatgg ggaattaact 240

catttgacca ctagggagtg gagctaggga agtcactcgc ttctcaagtg aggaaacagc 300

tgcatggaac ccggatggaa ggacacctgt tgag 334

<210> 319
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 319

ggtgaacctg gaactaatgg ccagcacagc ttctatcaat taatccatca gggaagggtt 60

atcccttgcg actttattgg tgttgttaaa agtcagcagc ctgtttactt gaaaggggaa 120

actgtgagta atcatgatga gcttatgtcc aatttctttg cccaacctga tgctcttgct 180

tatggaaaga ctcctgaaca gttgcacagt gagaaagttc cagaaaatct tatccctcat 240

aagactttta agggcaaccg gccatcacta agtttgctt 279

<210> 320
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 320

tgcaaatgtt gatccagttg acgttgcacg aagcattaaa gatttggatc cagaaaccac 60

tctggtggtg gttgtatcaa agacattcac aacagcggaa acaatgttaa atgctcgaac 120

tcttaaggag tggatcgttt cttctcttgg gccacaggct gttgccaaac atatgattgc 180

tgtcagcact aatcttaagc ttgtgaagga gtttggaatt gacccaaaca atgcttttgc 240

cttttgggac tgggttggcg gccgttatag tgtt 274

<210> 321
<211> 283
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (73),(87),(93),(219),(241),(250),(255)
<223> unsure at all n locations

<400> 321

gccacaggct gttgccaaac atatgattgc tgtcagcact aatcttaagc ttgtgaagga 60

gtttggaatt ganccaaaca atgcttntgc ctnttgggac tgggttggcg gccgttatag 120

tgtttgcagt gctgttggcg ttctgccatt atctcttcag tatggcttgc caattgtcca 180

gaaatttttg gagggagctt ccagcattga caaccactnc tactcatctt catgtgagaa 240

naatataccn gtacntcttg gtgctgagtg tgtggaatgt ttc 283

<210> 322
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 322

gccacaggct gttgccaaac atatgattgc tgtcagcact aatcttaagc ttgtgaagga 60

gtttggaatt gacccaaaca atgcttttgc cttttgggac tgggttggcg gccgttatag 120

tgtttgcagt gctgttggcg ttctgccatt atctcttcag tatggctttc caattgtcca 180

gaaatttttg gagggagctt ccagcattga caaccacttc tactcatctt catttgagaa 240

aaatataccg tacttcttgg tttgctgag 269

<210> 323
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 323

agaagtggat catgggttgg agcaactgga aaaccgttga caaatgttgt gtcagttgga 60

ataggtggta gctttcttgg ccctctattt gtgcatactg cactccagac cgatccagaa 120

gcagcagaat gtgcaaaagg ccggcaactg agattccttg caaatgttga tccagttgac 180

gttgcacgaa gcattaaaga tttggatcca gaaaccactc tggtggtggt tgtatcaaag 240

acattcacaa cagctgaaac aatgttaaat gctcgaactc ttaaggagtg gatcgtttc 299

<210> 324
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 324

ttggaattga cccaaacaat gcttttgcct tttgggactg ggttggcggc cgttatagtg 60

tttgcagtgc tgttggcgtt ctgccattat ctcttcagta tggctttcca attgtccaga 120

aatttttgga gggagcttcc agcattgaca accacttcta ctcatcttca tttgagaaaa 180

atatacctgt acttcttggt ttgctgagtg tgtggaatgt tcatttcttg gttatccagc 240

tagggcaata tgccatatct caggcacttg agaagt 276

<210> 325
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 325

ctccaagaga tgcagtcata aacagtgatg gggtgactgt ggtccctgag gtttggagtg 60

ttaaagataa aatcaagcag ttttcagaga cttttagaag tggatcatgg gttggagcaa 120

ctggaaaacc gttgacaaat gttgtgtcgg ttggaatagg tggtagcttt cttggccctc 180

tatttgtgca tactgcactc cagaccgatc cagaagcagc agaatgtgca aaaggccggc 240

aactgagatt ccttg 255

<210> 326
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 326

gcacgaggtt ctgccattat ctcttcagta tggctttcca attgtccaga aatttttgga 60

gggagcttcc agcattgaca accacttcta ctcatcttca tttgagagaa atatacctgt 120

acttcttggt ttgctgagtg tgtggaatgt ttcatttctt ggttatccag ctagggcaat 180

attgtcatat tctcaggcac ttgagaagtt ggcaccacat atacagcagc tta 233

<210> 327
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 327

aatttctttg cccaacctga tgctcttgct tatggaaaga ctcctgaaca gttgcacagt 60

gagaaagttc cagaaaatct tatccctcat aagactttta agggcaaccg gccatcacta 120

agtttgcttc tgcctacact atccgcatat g 151

<210> 328
<211> 115
<212> nucleic acid
<213> Zea mays

<400> 328

gtggtagctt tcttggcccct ctatttgtgc atactgcact ccagaccgat gcagaagcag 60

cagaatgtgc aaaaggccgg caactgagat tccttgcaaa tgttgatcca gttga 115

<210> 329
<211> 113
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (84)
<223>

<400> 329

ggagtttgga attgacccaa acaatgcttt tgccttttgg gactgggttg gcggccgtta 60

tagtgtttgc agtgctgttg gcgntctgcc attatctctt cagtatggct ttc 113

<210> 330
<211> 122
<212> nucleic acid
<213> Zea mays

<400> 330

tatcttatcc ctcataagac ttttaagggc aaccggccat cactaagttt gcttctgcct 60

acactatctg catacgaggt tacgacagct tttatccatc tatgagcacc ggattgcagt 120

tc 122

<210> 331
<211> 443
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (37),(49),(147),(150),(207),(275),(286),(296),(342),
(351),(371),(393),(396),(420),(424),(428),(430),(441)
<223> unsure at all n locations

<400> 331

agtctatctc tgttactgtg caagaggtaa ctcctanagc tgttggagna ctgattgcac 60

tttatgaacg tgctgtgggg atttatgctt ctttggtaaa tatcaatgcc tatcatcagc 120

ctggtgttga ggctgggaaa aaggcancan gagaagtatt ggcccttcag aaaagggttc 180

tgactgtatt aaaggaggcc atctgcnaga accctactga gccattgact ctagatgaaa 240

ttgcagatcg ctgacattgc cctgaagata ttganatgat ctacanaata atccancaca 300

tggcttctaa cgacagatca cttatagcag aaggcatctg cngctttctt ngcagtgtta 360

aggtgtacct nggtgaaatg caattttgga ccnaantatg caggccggga tagattctgn 420

gtcnggancn aagtaacatt ntt 443

<210> 332
<211> 420
<212> nucleic acid
<213> Zea mays

<400> 332

ctcttgggaa agaatttgat ctggatggca accgggtaaa tcaagggcta tgtgtagatg 60

gaaacaaagg aagcactgac cagcacgctt acattcagca gctgagagaa ggtgtacaca 120

acttctttgt tacttttatc gaggtcttgc gtgacaggcc tgctggtcat gattgggagc 180

ttgaacctgg agtcacatgt ggtgactatt tgtttgggat gttgcaggga acacgttctg 240

ctctttatgc aaatgaccgt gaatctatct ctgttactgt gcaagaggta actcctagag 300

ctgttggagc actggttgca ctttatgaac gtgctgtggg gctttatgct tctttggtaa 360

atatcaatgc ctatcatcaa cctggtgttg aggctgggaa aaaggcagca ggagaagtgt 420

<210> 333
<211> 355
<212> nucleic acid
<213> Zea mays

<400> 333

agttcttgcg gtcaagcaat caaccccgta tgatacaacc gtgctgccga aggtgtaatt 60

acccagttgt ttttgacatg ccaattgctg agttctgact tggcaaggtt gagcataagt 120

ctttcttcat ttgggagtta tcacagagcc agtttggcag tgctgtagtt ttggttttac 180

ctactctttg tagaagaaaa gtgaagagtg gatattatgg aacaaaatat atacctacgg 240

cagcacgcag catgatgaaa catatttaaa aaatttgggt gctctaccac atgcccgtgg 300

aataaaacgg atgtaaactc agtgcaaaaa aaaaaaaaaa aaaaaaaaac aaaaa 355

<210> 334
<211> 376
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (351)
<223>

<400> 334

aacgagcggc gggacggcta gcccgcaata caaaatccgg aggaactccc aggaggcgaa 60

aagcagatcc gtctcccccg agccccgacc ggcgatcgct atcgacttgt agcggaagcc 120

atggcgtcgg cagcgctaat ctgcggcacg gagcagtgga aggccctcca ggcgcacgtc 180

ggcgcgattc agaagacgca cctgcgcgac ctgatggccg acgccgaccg atgcaaggca 240

atgacggctg agtatgaagg gatctttctg gattactcga gacagcaggc gactggtgaa 300

accctggaga agctccttaa atgggctgac gctgcgaagc tcaaggagaa ngatgagaag 360

atgtttaaag gtgaaa 376

<210> 335

<211> 451
<212> nucleic acid
<213> Zea mays

<400> 335

ccgtatatag tgtttgcagt gctgttggcg ttctgccatt atctcttcag tatggctttc 60

caattgtcca gaaatttttg gagggagctt ccagcattga caaccacttc tactcatctt 120

catttgagaa aaatatacct gtacttcttg gtttgctgag tgtgtggaat gtttcatttc 180

ttggttatcc agctagggca atattgccat attctcaggc acttgagaag ttggcaccac 240

atatacagca gcttagcatg gagagtaacg ggaagggtgt ttccattgat ggcgcccaac 300

tttcctttga gacaggtgaa attgattttg gtgaacctgg aactaatggc cagcacagct 360

tctatcaatt aatccatcaa ggaagggtta tcccttgcga ctttattggt gttgttaaaa 420

gtcagcagcc tgtttacttg aaaagggaaa c 451

<210> 336
<211> 453
<212> nucleic acid
<213> Zea mays

<400> 336

gtcatgcact ggagacgttg gcactacata tacagcagct tatcatggat agtaacgggg 60

ggggtgtttc cattgatggc gcccaacttt cctttgagac aggtgaaatt gattttggtg 120

aacctggaac taatggccag cacagcttct atcaattaat ccatcaggga agggttatcc 180

cttgcgactt tattggtgtt gttaaaagtc agcagcctgt ttacttgaaa ggggaaactg 240

tgagtaatca tgatgagctt atgtccaatt tctttgccca acctgatgca cttgcttatg 300

gaaagactcc tgaacagttg cacagtgaga aagttccaga aaatcttatc cctcataaga 360

cttttaaggg caaccggcca tcactaagtt tgcttctgcc tacactatcc gcatatgagg 420

ttggacagct tttatccatc tatgagcacc gga 453

<210> 337
<211> 419
<212> nucleic acid
<213> Zea mays

<400> 337

aaaatcaagc agttttcaga gacttttaga agtggatcat gggttggagc aactggaaaa 60

ccgttgacaa atgttgtgtc agttggaata ggtggtagct ttcttggccc tctatttgtg 120

catactgcac tccagaccga tccagaagca gcagaatgtg caaaaggccg gcaactgaga 180

ttccttgcaa atgttgatcc agttgacgtt gcacgaagca ttaaagattt ggatccagaa 240

accactctgg tggtggttgt atcaaagaca ttcacaacag ctgaaacaat gttaaatgct 300

cgaactctta aggagtggat cgtttcttct cttgggccac aggctgttgc caaacatatg 360

attgctgtca gcactaatct taagcttgtg aaggagtttg gaattgaccc aaacaatgc 419

<210> 338
<211> 460
<212> nucleic acid
<213> Zea mays

<400> 338

tcgatatgct gcaacggcag gaccaggact gggactcgcg ggccgacaca cgcctctaca 60

tttcttggtt atacagctag ggcaatattg ccatattctc aggcacttga gaagttggca 120

ccacatatac agcagcttag catggagagt aacgggaagg gtgtttccat tgatggcgcc 180

caactttcct ttgagacagg tgaaattgat tttggtgaac ctggaactaa tggccagcac 240

agcttctatc aattaatcca tcagggaagg gttatccctt gcgactttat tggtgttgtt 300

aaaagtcagc agcctgttta cttgaaaggg gaaactgtga gtaatcatga tgagcttatg 360

tccaatttct ttgcccaacc tgatgctctt gcttatggaa agactcctga acagttgcac 420

agtgagaaag ttccagaaaa tcttatccct cataagactt 460

<210> 339
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 339

gcgaagctca aggagaagat tgagaagatg tttaaaggtg aaaagataaa tagcacagag 60

aacaggtcag tgcttcatgt agctctgagg gctccaagag atgcagtcat aaacagtgat 120

ggggtgaatg tggtccctga ggttcggagt gttaaagata aaatcaagca gttttcagag 180

acttttagaa gtggatcatg ggttggagca actggaaaac cgttgacaaa tgttgtgtcg 240

gttggaatag gtggtagctt tcttggccct ctatttgtgc atactgcact ccagaccgat 300

ccagaagcag cagaatgtgc aaa 323

<210> 340
<211> 422
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (27),(32),(34),(47),(50),(65),(80),(94),(371),(389),
(391),(394)...(395),(399)
<223> unsure at all n locations

<400> 340

ccaaaactga gtctcattac aaatgtngat cnanttgacg ttgcacnaan cattaaagat 60

ttggntccag aaaccacccn ggtggtggtt gtancaaaga cattcacaac agcggaaaca 120

atgttaaatg ctcgaactct taaggagtgg atcgtttctt ctcttgggcc acaggctgtt 180

gccaaacata tgattgctgt cagcactaat cttaagcttg tgaaggagtt tggaattgac 240

ccaaacaatg cttttgcctt ttgggactgg gttggcggcc gttatagtgt ttgcagtgct 300

gttggcgttc tgccattact cttcagtatg gctttccaat tgtccagaaa tttttggagg 360

gaacttccag ncattgacaa acaacttcna ntcnncctnc attttgagaa aaatatacct 420

gt 422

<210> 341
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 341

gccgcgcacc cctggcacga cctcgagatc ggtcctgaag ctccggccgt cttcaacgtc 60

gtcgtggaga tcaccaaggg gagcaaggtg aagtacgagc tggacaagaa gacggggctc 120

atcaaggtgg accggatcct ctactcgtcc gtcgtctacc ctcacaacta cggcttcgtg 180

ccccggacgc tctgcgagga caacgacccc atggacgtcc tcgtgctcat gcaggaaccc 240

gtccttcccg gcgc 254

<210> 342

<211> 205
<212> nucleic acid
<213> Zea mays

<400> 342

tttgtttcct gctctggcca aattccagac aagaagaacg agaacaagga ggtggccgtc 60

aacgacttcc tgcccgccgc cgctgcccgc gaagcatcca gtactccatg taaagtcgcc 120

ctgctcattt atctcgtgga tgacttgaaa aaaaacgagg tttggattct gggactctgc 180

attcgtacgt gttgacatgg atctt 205

<210> 343
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 343

tcgacatgtg tgaatatgga gcgtgtctga cgatccttcc ggtgcgcgtc cgtccgtccg 60

ttacgtacgt ggtgccgacg agcaggtcgt ggagatcacc aaggggagca aggtgaagta 120

cgagctggac aagaagacgg ggctcatcaa ggtggaccgg atcctctact cgtccgtcgt 180

ctaccctcac aactacggct tcgtgccccg gacgctctgc gaggacaacg accccatgga 240

c 241

<210> 344
<211> 324
<212> nucleic acid
<213> Zea mays

<400> 344

ggttcctgcc ttgaacgaaa ggatactgtc atccatgtcc aggaggtctg ttgctgcaca 60

cccttggcat gatctggaga taggtcctgg tgctccaacc atattcaact gcgtaaggcc 120

accctgtcat gcttgactgg tcctcttgtg atatgttcat gttaatagca tgatgtcttt 180

tgttctattg gaaaataaaa agtctccctg gactctaaaa tcaatgcctg tgaacacatg 240

aactgtttgt gtcacccatg ttcctctgct ccttggcact ttctgatgca tgctcaaatg 300

cttaagaaag actcatagaa gcga 324

<210> 345

<211> 123
<212> nucleic acid
<213> Zea mays

<400> 345

ctccgcgcca gggccatcgg cctcatgcct atgatagatc agggagagaa ggacgacaag 60

atcatcgccg tctgcgccga cgaccccgag taccgccact acaacgacat cagcgagctc 120

tcc 123

<210> 346
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 346

ggccgctccg ccaccccgca ctcgcctgtc gcctcttctc gctttcgcca ccggggcagc 60

gctccggtga gtggcgaagg gcccctcccg gctcccgctt ccctctgcca tggctggacc 120

tgctgttctc aatgagcgta tcctttcttc catgtcccag aaacatgttg ctgctcaacc 180

atagcatgat ttggagatag gaccaggggc tcctgaattc ttcaattgtg tggttgagat 240

tcctagaggc agcaaggtta agtacgagtt ggacaaggca tctggt 286

<210> 347
<211> 289
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (177),(179)
<223> unsure at all n locations

<400> 347

cttgcaggga gagaaggacg acaagatcat cgccgtctgc gccgacgacc ccgagtaccg 60

ccactacaac gacatcagcg agctctcccc tcaccgcctc caggagatcc gccgcttctt 120

tgaagactgt acgcgcgctt gctctctctc tctctctctg ggggcgcgct ttctggngnc 180

tctctctctc tctctatctc tcggcgctcg ctgtgtgcgc gcgcggtgct ctgtgagcgc 240

gcgcgcccct ctgtatgagt gcgtgtgtgg gtgttgtgtc tcgcgctct 289

<210> 348
<211> 96
<212> nucleic acid
<213> Zea mays

<400> 348

ggaggtccgt agctgctcat ccgtggcatg atcttgagat cggtcctgat gctcctgctg 60

tttccgaatg ttgttgttca gatcacaaag ggaagc 96

<210> 349
<211> 199
<212> nucleic acid
<213> Zea mays

<400> 349

tagcgagtaa tcggatcgtc aggagtccgt agtgtcatcc gggatgatct tgagatcggt 60

ctgatgctct gctgttatca atgttgttgt tgagatcaca aagggaagca acataaaata 120

tgagctcgac aagaaaactg gactgattaa ggttgatcga gtcctgcact catcagttgt 180

atacccacac aattatggt 199

<210> 350
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 350

agcgacacgg ttggagaccc attcaaagaa gtacattgag actggtgccc ttggtggcaa 60

aggcagtgag tcccataagg ctgcggttac aggcgacacg gttggagacc cattcaaaga 120

cactgcagga ccatcgctgc acgttcttat caagatgctc gccacgatca cactggtcat 180

ggctcccata ttcttgtgat taaccaacca gatttatcaa gcttgccatt aaccctgcgg 240

agatgtatct atgcgacttg tagatgaggt gtttacctgc atgt 284

<210> 351
<211> 132
<212> nucleic acid
<213> Zea mays

<400> 351

gcactgagaa ctcgatcgct ggctagaaca caggtctctc attcacttcc atgcgctccg 60

tggccatcgc cgtccccgac cgcagcgcag gactgaggat aaatgaagaa gttaaggttg 120

ctgcttctgc tg 132

<210> 352
<211> 333
<212> nucleic acid
<213> Zea mays

<400> 352

gccaccgatc gctcctctcc actttccaca ttccagttcc actccgcctc cgctgccggt 60

cgccgactcc gaaactccga cagtccgacc acaaggtctt gtgcgggatc cacagaagga 120

tgagtgaaga ggataagact gctgcttctg ctgagcagcc gaagagggcc cctaagctca 180

atgaaaggat cctctcttct ctgtccagga ggtccgtagc tgctcatcca tggcatgatc 240

ttgagatcgg tcctgatgct cctgctgttt tcaatgttgt tgttgagatc acaaagggaa 300

gcaaagttaa atatgagctt gacaagaaaa ctg 333

<210> 353
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 353

ctccgctgcc ggtcgccgac tccgaaactc cgacagtccg accacaagga tccacagaag 60

gatgagtgaa gaggataagg ctgctgcttc tgctgagcag ccgaagaggg cccctaagct 120

caatgaaagg atcctctctt ctctgtccag gaggtccgta gctgctcatc cgtggcatga 180

tcttgagatc ggtcctgatg ctcctgctgt tttcaatgtt gttgttgaga tcacaaaggg 240

aagcaaagtt aaatatgagc tcgacaagaa aactggactg attaaggttg atcgagtcct 300

gtactcatca gttgtatacc ctcacaatta tggttcgtcc 340

<210> 354
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 354

gccaccgatc gctcctctcc actttccaca ttccagttcc actccgcctc cgctgccggt 60

cgccgactcc gaaactccga cagtccgacc acaagaagga tgagtgaaga ggataagact 120

gctgcttctg ctgagcagcc gaagagggcc cctaagctca atgaaaggat cctctcttct 180

ctgtccagga ggtccgtagc tgctcatcca tggcatgatc ttgagatcgg tcctgatgct 240

cctgctgttt tcaatgttgt tgttgagatc acaaagggaa gcaaagttaa atatgagctt 300

gacaagaaaa ctggactgat ta 322

<210> 355
<211> 357
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (6)
<223>

<400> 355

ccccancgat cgctcctctc cactttccac attccagttc caacacgcct ccgctgcagg 60

tcgccgactc cgaaactccg acagtccgac cacaaggtct tgtgcgggat ccacagaagg 120

atgagtgaag aggataagac tgctgcttct gctgagcagc cgaagagggc ccctaagctc 180

aatgaaagga tcctctcttc tctgtccagg aggtccgtag ctgctcatcc atggcatgat 240

cttgagatcg gtcctgatgc tcctgctgtt ttcaatgttg ttgttgagat cacaaaggga 300

agcaaagtta aatatgagct tgacaagaaa actggactga ttaaggttga tcgagtc 357

<210> 356
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 356

accagggtga aaaggatgac aagataatag cagtctgtgc tgatgatcct gaatatcgtc 60

actacaacga catcagtgag ctgtctcctc atcgcctgca agagatcaag cggttctttg 120

aagattataa gaagaatgag aataaagagg ttgctgtcga tgcattcttg cctgcgacca 180

cagctcgaga ggccattcag tactccatgg atctgtatgc gcagtatatt ttgcaaagct 240

tgaggcagta gattggaagc aactatttat ctgggcgtct tggaatgagt gtgattttaa 300

taagtcaaa 309

<210> 357
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 357

caaagttaaa tatgagcttg acaagaaaac tggactgatt aaggttgatc gagtcctgta 60

ctcatcagtt gtataccctc acaattatgg tttcgttcca aggactcttt gtgaagacaa 120

tgacccaatg gatgtgttag tcctgatgca ggagcctgtt gttcctggtt cgttcctgcg 180

agcaagagca atcggcctta tgctcatgat tgaccagggt gaaaaggatg acaagataat 240

agcagtctgt gctgatgatc ctgaatatcg tcactacaac gacatcagtg agctgtctcc 300

tcatcgcctg ca 312

<210> 358
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 358

tcgacagtcc gaccacaagg tcttgtgcgg gatccacaga aggatgagtg aagaggataa 60

gactgctgct tctgctgagc agccgaagag ggcccctaag ctcaatgaaa ggatcctctc 120

ttctctgtcc aggaggtccg tagctgctca tccatggcat gatcttgaga tcggtcctga 180

tgctcctgct gttttcaatg ttgttgttga gatcacaaag ggaagcaaag ttaaatatga 240

gcttgacaag aaaactggac tgattaaggt tgatcgagtc ctgtactcat cagttgta 298

<210> 359
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 359

gcctccgctg ccggtcgccg actccgaaac tccgacagtc cgaccacaag gatccacaga 60

aggatgagtg aagaggataa ggctgctgct tctgctgagc agccgaagag ggcccctaag 120

ctcaatgaaa ggatcctctc ttctctgtcc aggaggtccg tagctgctca tccgtggcat 180

gatcttgaga tcggtcctga tgctcctgct gttttcaatg ttgttgttga gatcacaaag 240

ggaagcaaag ttaaatatga gctcgacaag aaaactggac tgattaaggt tgatcga 297

<210> 360
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 360

ctccactttc cacattccag ttccactccg cctccgctgc cggtcgccga ctccgaaact 60

ccgacagtcc gaccacaagg tcttgtgcgg gatccacaga aggatgagtg aagaggataa 120

gactgctgct tctgctgagc agccgaagag ggcccctaag ctcaatgaaa ggatcctctc 180

ttctctgtcc aggaggtccg tagctgctca tccatggcat gatcttgaga tcggtcctga 240

tgctcctgct gttttcaatg ttgttgttga gatcacaaag ggaagca 287

<210> 361
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 361

gagcactttc cacattccag ttccactccg cctccgctgc cggtcgccgt ctccgagact 60

ccgacagtcc gaccgcaagg tcttgtgcgg gatccacaga aggatgagtg aagaggataa 120

gactgctgct tctgctgagc agccgaagag ggcccctaag ctcaatgaaa ggatcctctc 180

ttctctgtcc aggaggtccg tagctgctca tccatggcat gatcttgaga tcggtcctga 240

tgctcctgct gttttcaatg ttgttgttga gatcacaaag gg 282

<210> 362
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 362

ttaaggttga tcgagtcctt tactcatcag ttgtataccc tcacaattat ggtttcattc 60

caaggactac ttgtgaagac aatgacccaa tggatgtgtt ggtcctgatg caggagcctg 120

ttgttcctgg ttcgttcctg agagctagag caattggcct tatgcccatg attgaccagg 180

gtgaaaagga tgacaagata atagcagtat gtgctgacga tcctgaatac cgtcactaca 240

acgacatcag cgagctgtct cctcaccgcc tgcaagagat caagcgcttc tttgaag 297

<210> 363
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 363

ctcgagccgc tccactttcc acattccagt tccactccgc ctccgctgcc ggtcgccgac 60

tccgaaactc cgacagtccg accacaaggt cttgtgcggg atccacagaa ggatgagtga 120

agaggataag actgctgctt ctgctgagca gccgaagagg gcccctaagc tcaatgaaag 180

gatcctctct tctctgtcca ggaggtccgt agctgctcat ccatggcatg atcttgagat 240

cggtcctgat gctcctgctg ttttcaatgt tgttgttga 279

<210> 364
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 364

gcggttcttt gaagattata agaagaatga gaataaagag gttgctgtcg atgcattctt 60

gcctgcgacc acagctcgag aggccattca gtactccatg gatctgtatg cgcagtatat 120

tttgcaaagc ttgaggcagt agattggaag caactattta tctgggcgtc ttggaatgag 180

tgtgatttta ataagtcaaa acacttgata ttgtgtgcaa atcttggggt tgagaacaat 240

gtcactagct gtgatttact tctgtgactt gc 272

<210> 365
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 365

ccacattcca gttccactcc gcctccgctg ccggtcgccg actccgaaac tccgacagtc 60

cgaccacaag gatccacaga aggatgagtg aagaggataa ggctgctgct tctgctgagc 120

agccgaagag ggcccctaag ctcaatgaaa ggatcctctc ttctctgtcc aggaggtccg 180

tagctgctca tccgtggcat gatcttgaga tcggtcctga tgctcctgct gttttcaatg 240

ttgttgttga gatcacaaag ggaggcaaag ttaaatatga gctcgacaag aa 292

<210> 366
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 366

ccactttcca cattccagtt ccactccgcc tccgctgccg gtcgccgact ccgaaactcc 60

gacagtccga ccacaaggat ccacagaagg atgagtgaag aggataaggc tgctgcttct 120

gctgagcagc cgaagagggc ccctaagctc aatgaaagga tcctctcttc tctgtccagg 180

aggtccgtag ctgctcatcc gtggcatgat cttgagatcg gtcctgatgc tcctgctgtt 240

ttcaatgttg ttgttgagat cacaaa 266

<210> 367
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 367

ccacattcca gttccactcc gcctccgctg ccggtcgccg actccgaaac tccgacagtc 60

cgaccacaag gatccacaga aggatgagtg aagaggataa ggctgctgct tctgctgagc 120

agccgaagag ggcccctaag ctcaatgaaa ggatcctctc ttctctgtcc aggaggtccg 180

tagctgctca tccgtggcat gatcttgaga tcggtcctga tgctcctgct gttttcaatg 240

ttgttgttga gatcacaaag ggaagcaaag ttaaatatga gctc 284

<210> 368
<211> 341
<212> nucleic acid
<213> Zea mays

<400> 368

ccaggttgct cctcatttcc actttccact gcgcctccgc tgcccatcgc cgtccccgac 60

cgcagcgcag gactgaggat gagtgaagag gataaggctg ctgcttctgc tgagcagcct 120

aagagggccc ctaagctcaa tgaaaggatc ctctcctctc tgtccaggag gtccgtagct 180

gctcatccat ggcatgatct cgagatcggt cctggtgctc ctgctgtatt caatgttgtt 240

gttgagatca caaagggaag caaagtcata tacgagcttg acaagaaaac tggactgatt 300

aaggttgatc gagtccttta ctcatcagtt gtatacctca c 341

<210> 369
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 369

attccactcc gcctccgtgc cggtcgccga ctccgaaact ccgacagtcc gaccacaagg 60

tcttgtgcgg gatccacaga aggatgagtg aagaggataa gactgctgct tctgctgagc 120

agccgaagag ggcccctaag ctcaatgaaa ggatcctctc ttctctgtcc aggaggtccg 180

tagctgctca tccatggcat gatcttgaga tcggtcctga tgctcctgct gttttcaatg 240

ttgttgttga gacgccaaag ggaagcaaa 269

<210> 370
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 370

cctcacaatt atggtttcgt tccaaggact ctttgtgaag acaatgaccc aatggatgtg 60

ttagtcctga tgcaggagcc tgttgttcct ggttcgttcc tgcgagcaag agcaatcggc 120

cttatgccca tgattgacca gggtgaaaag gatgacaaga taatagcagt ctgtgctgat 180

gatcctgaat atcgtcacta caacgacatc agtgagctgt ctcctcatcg cctgcaagag 240

atcaagcggt tcttt 255

<210> 371
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 371

ctcctctcca ctttccacat tccagttcca ctccgcctcc gctgccggtc gccgactccg 60

aaactccgac agtccgacca caagaaggat gagtgaagag gataagactg ctgcttctgc 120

tgagcagccg aagagggccc ctaagctcaa tgaaaggatc ctctcttctc tgtccaggag 180

gtccgtagct gctcatccat ggcatgatct tgagatcggt cctgatgctc ctgctgtttt 240

caatgttgtt gttgagatca caaagggaag cagagttaaa tatga 285

<210> 372
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 372

agactccgaa actccgacag tccgaccaca agaaggatga gtgaagagga taagactgct 60

gcttctgctg agcagccgaa gagggcccct aagctcaatg aaaggatcct ctcttctctg 120

tccaggaggt ccgtagctgc tcatccatgg catgatcttg agatcggtcc tgatgctcct 180

gctgttttca atgttgttgt tgagatcaca aagggaagca atgttaaata tgatcttgac 240

aagaatactg gactgatgaa ggttgat 267

<210> 373
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 373

ggaggtccgt agctgctcat ccgtggcatg atcttgagat cggtcctgat gctcctgctg 60

ttttcaatgt tgttgttgag atcacaaagg gaagcaaagt taaatatgag ctcgacaaga 120

aaactggact gattaaggtt gatcgagtcc tgtactcatc agttgtatac cctcacaatt 180

atgtgttcgt tccgaggact ctttgtgaag acaatgaccc aatggatgtg ttagtcctga 240

tgcaggagcc tgttgttcct ggttcg 266

<210> 374
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 374

gctgatgatc ctgaatatcg tcactacaac gacatcagtg agctgtctcc tcatcgcctg 60

caagagatca agcggttctt tgaagattat aagaagaatg agaataaaga ggttgctgtc 120

gatgcattct tgcctgcgac cacagctcga gaggccattc agtactccat ggatctgtat 180

gcgcagtata ttttgcaaag cttgaggcag tagattggaa gcaactattt atctgggcgt 240

cttggaatga gtg 253

<210> 375
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 375

gctgccgatc gccgtccccg accgcagtgc aggactgagg atgagtgaag aggataaggc 60

tgctgcttct gctgagcagc ctaagagggc ccctaagctc aatgaaagga tcctctcctc 120

tctgtccagg aggtccgtag ctgctcatcc atggcatgat ctcgagatcg gtcctggtgc 180

tcctgctgta ttcaatgttg ttgttgagat cacaaaggga agcaaagtca aatacgagct 240

tgacaagaaa actggactga ttaaggttga tcgagtcctt tactcatcag ttgtataccc 300

tca 303

<210> 376
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 376

cgaccaccga tcgctcctga gcactttcca cattccagtt ccacaccgcc tccgctgacg 60

gtcgccgtct ccgagactcc gacagtccga ccgcaagaag gatgagtgaa gaggataaga 120

ctgctgcttc tgctgagcag ccgaagaggg cccctaagct caatgaaagg atcctctctt 180

ctctgtccag gaggtccgta gctgctcatc catggcatga tcttgagatc ggtcctgatg 240

ctcctgctgt tttcaatgtt gttgttgaga tcacaaaggg aagca 285

<210> 377
<211> 303
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (4)
<223>

<400> 377

aagnaccacc gatcgctcct ctccactttc cacattccag ttccactccg cctccgctgc 60

cggtcgccga ctccgaaact ccgacagtcc gaccacaagg tcttgtgcgg gatccacaga 120

aggatgagtg aagaggataa gactgctgct tctgctgagc agccgaagag ggcccctaag 180

ctcaatgaaa ggatcctctc ttctctgtcc aggaggtccg tagctgctca tccatggcat 240

gatcttgaga tcggtcctga tgctcctgct gttttcaatg ttgttgttga gatcacaaag 300

gga 303

<210> 378
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 378

acgcctccgc tgccgatcgc cgtccccgac cgcagtgcag gactgaggat gagtgaagag 60

gataaggctg ctgcttctgc tgagcagcct aagagggccc ctaagctcaa tgaaaggatc 120

ctctcctctc tgtccaggag gtccgtagct gctcatccat ggcatgatct cgagatcggt 180

cctggtgctc ctgctgtatt caatgttgtt gttgagatca caaagggaag caaagtcaaa 240

tacgagcttg acaagaaaac tggactgatt aaggttgatc gagtccttta ctcatcagtt 300

gta 303

<210> 379
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 379

attccaagga ctctttgtga agacaatgac ccaatggatg tgttggtcct gatgcaggag 60

cctgttgttc ctggttcgtt cctgagagct agagcaattg gccttatgcc catgattgac 120

cagggtgaaa aggatgacaa gataatagca gtatgtgctg acgatcctga ataccgtcac 180

tacaacgaca tcagcgagct gtctcctcac cgcctgcaag agatcaagcg cttctttgaa 240

gattacaaga aaaacgagaa caaagaa 267

<210> 380
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 380

cctggtgctc ctgctgtatt caatgttgtt gttgagatca caaagggaag caaagtcaaa 60

tacgagcttg acaagaaaac tggactgatt aaggttgatc gagtccttta ctcatcagtt 120

gtataccctc acaattatgg tttcattcca aggactcttt gtgaagacaa tgacccaatg 180

gatgtgttgg tcctgatgca ggagcctgtt gttcctggtt cgttcctgag agctagagca 240

attggcctta tgcccatgat tga 263

<210> 381
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 381

agcctccgct gccggtcgcc gactccgaaa ctccgacagt ccgaccacaa gcaggatgag 60

tgaagaggat aagactgctg cttctgctga gcagccgaag agggccccta agctcaatga 120

acggatcctc tcttctctgt ccaggaggtc cgtagctgct catccatggc atgatcttga 180

gatcggtcct gatgctcctg ctgttttcaa tgttgttgtt gagatcacaa agggaagcaa 240

agttaaatat gagcttgaca agaaaactgg act 273

<210> 382
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 382

gtagctgctc atccatggca tgatcttgag atcggtcctg atgctcctgc tgttttcaat 60

gttgttgttg agatcaacag cgaagcaaag ttaaatatga gcttgacaag aaaactggac 120

tgattaaggt tgatcgagtc ctgtactcat cagttgtata ccctcacaat tatggtttcg 180

ttccaaggac tctttgtgaa gacaatgacc caatggatgt gttagtcctg atgcaggagc 240

ctgttgttcc tggttcgttc ctggagcaag agcatc 276

<210> 383
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 383

ccactttcca ctgcacctcc gctgcccatc gccgtccccg accgcagcgc aggactgagg 60

atgagtgaag aggataaggc tgctgcttct gctgagcagc ctaagagggc ccctaagctc 120

aatgaaagga tcctctcctc tctgtccagg aggtccgtag ctgctcatcc atggcatgat 180

ctcgagatcg gtcctggtgc tcctgctgta ttcaatgttg ttgttgagat cacaaaggga 240

agcaaagtca aatacgagct tgacaagaaa actggactga tta 283

<210> 384
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 384

ctccgcctcc gctgccggtc gccgactccg aaactccgac agtccgacca caaggtcttg 60

tgcgggatcc acagaaggat gagtgaagag gataagactg ctgcttctgc tgagcagccg 120

aagagggccc ctaagctcaa tgaaaggatc ctctcttctc tgtccaggag gtccgtagct 180

gctcatccat ggcatgatct tgagatcggt cctgatgctc ctgctgtttt caatgttgtt 240

gttgagatca c 251

<210> 385
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 385

ctttccactc cgcctccgct gccgatcgcc gtccccgacc gcagtgcagg actgaggatg 60

agtgaagagg ataaggctgc tgcttctgct gagcagccta agagggcccc taagctcaat 120

gaaaggatcc tctcctctct gtccaggagg tccgtagctg ctcatccatg gcatgatctc 180

gagatcggtc ctggtgctcc tgctgtattc aatgttgttg ttgagatcac aaagggaagc 240

aaagtcaaat acgagcttga caa 263

<210> 386
<211> 296
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (228)
<223>

<400> 386

gccgatcgcc gtccccgacc gcagtgcagg actgaggatg agtgaagagg ataaggctgc 60

tgcttctgct gagcagccta agagggcccc taagctcaat gaaaggatcc tctcctctct 120

gtccaggagg tccgtagctg ctcatccatg gcatgatctc gagatcggtc ctggtgctcc 180

tgctgtattc aatgttgttg ttgagatcac aaagggaagc aaagtcanat acgagcttga 240

caagaagact ggactgatta aggttgatcg agtcctttac tcatcagttg tatacc 296

<210> 387
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 387

gtcattcagt actccatgga tctgtatgcg cagtatattt tgcaaagctt gaggcagtag 60

attggaagca actatttatc tgggcgtctt ggaatgagtg tgattctaat aagtcaaaac 120

acttgatatt gtgtgcaaat cttggggttg agaacaatgt cactagctgt gatttacttc 180

tgtgacttgc atttttttc ttgttaaatt atgaataagc g 221

<210> 388
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 388

ctcatttcca ctttccactg cgcctccgct gcccatcgcc gtccccgacc gcagcgcagg 60

tgaggatcca accccaacaa acttccaggc gacggactga ggatgagtga agaggataag 120

gctgctgctt ctgctgagca gcctaagagg gcccctaagc tcaatgaaag gatcctctcc 180

tctctgtcca ggaggtccgt agctgctcat ccatggcatg atctcgagat cggtcctggt 240

gctcctgctg tattcaatgt tgttgttgag atcacaaagg gaagcaaagt caaatacgag 300

cttgacaaga aaa 313

<210> 389
<211> 336
<212> nucleic acid
<213> Zea mays

<400> 389

ctactttcca ctccgcctcc gctgccgatc gccgtccccg accgcagtgc aggtgaggat 60

ccaaccccaa caaacttcca ggcgacggac tgaggatgag tgaagaggat aaggctgctg 120

cttctgctga gcagcctaag agggccccta agctcaatga aaggatcctc tcctctctgt 180

ccaggaggtc cgtagctgct catccatggc atgatctcga gatcggtcct ggtgctcctg 240

ctgtattcaa tgttgttgtt gagatcacaa agggaagcaa agtcaaatac gagcttgaca 300

agataactgg actgattaag gttgatcgag tccttt 336

<210> 390
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 390

ggatgacaag ataatagcag tatgtgctga cgatcctgaa taccgtcact acaacgacat 60

cagcgagctg tctcctcacc gcctgcaaga gatcaagcgc ttctttgaag attacaagaa 120

aaacgagaac aaagaagtcg cagttgatgc attcttgccc gcgacaacag ctcaagaagc 180

cattcagtac tccatggacc tgtatgccca gtatattttg caaagcttga ggcagtagat 240

tgcaagc 247

<210> 391
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 391

caatgttgtt gttgagatca caaagggaag caaagtcaaa tacgagcttg acaagaaaac 60

tggactgatt aaggttgatc gagtccttta ctcatcagtt gtataccctc acaattatgg 120

tttcattcca aggactcttt gtgaagacaa tgacccaatg gatgtgttgg tcctgatgca 180

ggagcctgtt gttcctggtt cgttcctgag agctagagca a 221

<210> 392
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 392

gtagtgacga tattcaggat catcagcaca gactgctaga gatcaagcgg ttctttgaag 60

attataagaa gaatgagaat aaagaggttg ctgtcgatgc attcttgcct gcgaccacag 120

ctcgagaggc cattcagtac tccatggatc tgtatgcgca gtatattttg caaagcttga 180

ggcagtagat tggaagcaac tatttatctg ggcgtcttgg aatgagtgtg attttaataa 240

gtcaaaacac tgatattgtg tgc 263

<210> 393
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 393

agcggagaac gaccccacgg tgacgacatg cttgctctgc tggactgtta ctctgagtaa 60

gactgctgct tctgctgagc agccgaagag ggcccctaag ctcaatgaaa ggatcctctc 120

ttctctgtcc aggaggtccg tagctgctca tccatggcat gatcttgaga tcggtcctga 180

tgctcctgct gttttcaatg ttgttgttga gatcacaaag ggaagcaaag ttaaatatga 240

gcttgacaag aaaactgg 258

<210> 394
<211> 209
<212> nucleic acid
<213> Zea mays

<400> 394

caagaaaact ggactgatta aggttgatcg agtcctgtac tcatcagttg tataccctca 60

caattatggt ttcgttccaa ggaatctttg tgaagacaat gacccaatgg atgtgttagt 120

cctgatgcag gagcctgttg ttcctggttc gttcctgcga gcaagagcaa tcggccttat 180

gcccatgatt gaccagggtg aaaaggatg 209

<210> 395
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 395

ctcatttcca ctttccactc cgcctccgct gccgatcgcc gtccccgacc gcagtgcagg 60

actgaggatg agtgaagagg ataaggctgc tgcttctgct gagcagccta agagggcccc 120

taagctcaat gaaaggatcc tctcctctct gtccaggagg tccgtagctg ctcatccatg 180

gcatgatctc gagatcggtc ctggtgctcc tgctgtattc aatgttgtgg ttgagatcac 240

aaggggaagc caagtcaata cgagcttgac aaga 274

<210> 396
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 396

tcctgatgca ggagcctgtt gttcctggtt cgttcctgag agctagagca attggcctta 60

tgcccatgat tgaccagggt gaaaaggatg acaagataat agcagtatgt gctgatgatc 120

ctgaataccg tcactacaac gacatcagcg agctgtctcc tcaccgcctg caagagatca 180

agcgcttctt tgaagattac aagaaaaacg agaacaaaga agtcgcagtt gatgcattct 240

<210> 397
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 397

tccgcctccg ctgccgatcg ccgtccccga ccgcagtgca ggactgagga tgagtgaaga 60

ggataaggct gctgcttctg ctgagcagcc taagagggca cctaagctca atgaaaggat 120

cctctcctct ctgtccagga ggtccgtagc tgctcatcca tggcatgatc tcgagatcgg 180

tcctggtgct cctgctgtat tcaatgttgt tgttgagatc acaaagggaa gcaaagtcaa 240

atacgagctt gacaagataa ctggactgat taaggttgat cgagtccttt actcatcagt 300

tgtataccct cac 313

<210> 398
<211> 187
<212> nucleic acid
<213> Zea mays

<400> 398

caaggtcttg tgtgggatcc acagaaggat gagtgaagag gataagactg ctgcttctgc 60

tgagcagccg aagagggccc ctaagctcaa tgaaaggatc ctctcttctc tgtccaggag 120

gtccgtagct gctcatccat ggcatgatct tgagatcggt cctgatgctc ctgctgtttt 180

caatgtt 187

<210> 399
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 399

ggatccaacc ccaacaaact tccaggcgac ggactgagga tgagtgaaga ggataaggct 60

gctgcttctg ctgagcagcc taagagggcc cctaagctca atgaaaggat cctctcctct 120

ctgtccagga ggtccgtagc tgctcatcca tggcatgatc tcgagatcgg tcctggtgct 180

cctgctgtat tcaatgttgt tgttgagatc acaaaaggaa agcaagtcaa atacgagctt 240

gac 243

<210> 400
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 400

gttctagatc gcgagcaaga gatcaagcgg ttctttgaag attataagaa gaatgagaat 60

aaagaggttg ctgtcgatgc attcttgcct gcgaccacag ctcgagaggc cattcagtac 120

tccatggatc tgtatgcgca gtatattttg caaagcttga ggcagtagat tggaagcaac 180

tatttatctg ggcggcttgg aatgagtgtg atcctaataa gccaaaacac ttgatattgt 240

gtgcaaatct tggggttgag a 261

<210> 401
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 401

gcgcctccgc tgcccatcgc cgtccccgac cgcagcgcag gtgaggatcc aaccccaaca 60

aacttccagg cgacggactg aggatgagtg aagaggataa ggctgctgct tctgctgagc 120

agcctaagag ggcccctaag ctcaatgaaa ggatcctctc ctctctgtcc aggaggtccg 180

tagctgctca tccatggcat gatctcgaga tcggtcctgg tgctcctgct gtattcaatg 240

ttgttgttga gatcacaaag ggaagccaag tcaaatacga gcttt 285

<210> 402
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 402

cccacgagtc cgcccacgcg tccgaaagag gttgctgacg atgcattctt gcctgcgacc 60

acagctcgag aggccattca gtactccatg gatctgtatg cgcagtatat tttgcaaagc 120

ttgaggcagt agattggaag caactattta tctgggcgtc ttggaatgag tgtgatttta 180

ataagtcaaa acacttgata ttgtgagcaa ttcgggggt tg 222

<210> 403
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 403

attggaagca actatttatc tgggcgtctt ggaatgagtg tgattttaat aagtcaaaac 60

acttgatatt gtgtgcaaat cttggggttg agaacaatgt cactagctgt gatttacttc 120

tgtgacttgc atttttttc ttgttaaatt atgaataagc gaagtccata cgtctactgt 180

gtggcttctt gctgggttca tcgtctaccc atgttcctca agcttgggaa catggggcct 240

ttccccattt ccgtgtcttc catgcgaagt aaaatttatt tgtatac 287

<210> 404

<211> 176
<212> nucleic acid
<213> Zea mays

<400> 404

gggaagcaaa gtcaaatacg agcttgacaa gaaaactgga ctgattaagg ttgatcgagt 60

cctttactca tcagttgtat accctcacaa ttatggtttc attccaagga ctctttgtga 120

agacaatgac ccaatggatg tgttggtcct gatgcaggag cctgttgttc ctggtt 176

<210> 405
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 405

tccagttcca ctccgcctcc gctgccggtc gccgactccg aaactccgac agtccgacca 60

caaggtcttg tgcgggatcc acagaaggat gagtgaagag gataagactg ctgcttctgc 120

tgagcagccg aagagggccc ctaagctcaa t 151

<210> 406
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 406

gaacaaagaa gtcgcagttg atgcattctt gcccgcgaca acagctcaag aagccattca 60

gtactccatg gacctgtatg cccagtatat tttgcaaagc ttgaggcagt agattgcaag 120

caacaattta tctatcatgc gtcttggatc ggggcgtgat tttaataagc cgaatcgctt 180

gctatattgc gaaccttgga attgagaaca gcgtcactag ctgtgattcg ctcctttctc 240

gttaaattat catatgaata ggc 263

<210> 407
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 407

gcacgagaga agtcgcagtt gatgcattct tgcccgcgac aacagctcaa gaagccattc 60

agtactccat ggacctgtat gcccagtata ttttgcaaag cttgaggcag tagattgcaa 120

gcaacaattt atctatcatg cgtcttggat gggggcgtga ttttaataag ccaaatcgct 180

tgctatattg ggaaccttgg aattgagaac agcgtcacta gctgtgattc gctcctt 237

<210> 408
<211> 166
<212> nucleic acid
<213> Zea mays

<400> 408

cggacgctgg gcgagtcctt tactcatcag ttgtataccc tcacaattat ggtttcattc 60

caaggacact ttgtgaagac aatgacccaa tggatgtgtt ggtcctgatg caggagcctg 120

ttgttcctgg ttcgttcctg agagctagag caattggcct tatgcc 166

<210> 409
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 409

cagacgcgtg gccgctgccc atcgccgtcc ccgaccgcag cgcaggtgag gatccaaccc 60

caacaaaatt ccaggcgacg gactgaggat gagtgaagag gataaggctg ctgcttctgc 120

tgagcagcct aagagggccc ctaagctcaa tgaaaggatc ctctcctctc tgtccaggag 180

gtccgtagct gctcatccat ggcatgatct cgagatcggt cctggtgctc ctgctgt 237

<210> 410
<211> 137
<212> nucleic acid
<213> Zea mays

<400> 410

gtagctgctc atccatggca tgatcttgag atcggtcctg atgctcctgc tgttttcaat 60

gttgttgttg agatcacaaa gggaagcaaa gttaaatatg agcttgacaa gaaaactgga 120

ctgattaagg ttaaccg 137

<210> 411
<211> 191
<212> nucleic acid

<213> Zea mays

<400> 411

acactgcacc tccgctgccc atcgccgtcc ccgaccgcag cgcaggacta gtatgaggat 60

aaggctgctg cttctgctga gcagcctaag agggccccta agctcaatga aaggatcctc 120

tcctctctgt ccaggaggtc cgtagctgct catccatggc atgatctcga gatcggtcct 180

ggtgctcctg c 191

<210> 412
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 412

gtgttggtcc tgatgcagga gcctgttgtt cctggttcgt tcctgagagc tagagcaatt 60

ggccttatgc ccatgattga ccagggtgaa aaggatgaca agataatagc agtatgtgct 120

gacgatcctg aatacc 136

<210> 413
<211> 160
<212> nucleic acid
<213> Zea mays

<400> 413

acggcccacc tggaagccgg agagaatcga gcagagccac cgatcgctcc tctccacttt 60

ccacattcca gttccactcc gcctccgctg ccggtcgccg actccgaaac tccgacagtc 120

cgaccacaag gatccacaga aggatgagtg aagaggataa 160

<210> 414
<211> 155
<212> nucleic acid
<213> Zea mays

<400> 414

cgctcctctc cactctccac attccagttc cactccgcct ccgctgccgg tcgccgactc 60

cgatactccg acagtccgac cacaaggtct tgtgcgggat ccacagaagg atgagtgaag 120

aggataagac tgctgcttct gctgagcagc cgaag 155

<210>	415
<211>	135
<212>	nucleic acid
<213>	Zea mays

<400>	415

ccaggttgct cctcatttcc actttccact gcggctccgc tgcccatcgc cgtccccgac   60

cgcagcgcag gactgaggat gagtgaagag gataaggctg ctgcttctgc tgagcagcct 120

aagagggccc ctaag 135

<210>	416
<211>	186
<212>	nucleic acid
<213>	Zea mays

<400>	416

agagaatcga gcagagccac ccggctgctc ctcatttcca ctttccactc cgcctccgct   60

gccgatcgcc gtccccgacc gcagtgcagg actgaggatg agtgaagagg ataaggctgc 120

agcttctgct gagcagccta agagggcccc taagctcaat gaaaggatcc tctcctctct 180

gtccag 186

<210>	417
<211>	303
<212>	nucleic acid
<213>	Zea mays

<400>	417

aaccgctccg ccacctcgcc actcgcctct tctcgctctc gccaccgggc cagggaaggg   60

accatccgat cggatccgtc atggctggag ctgctgctct caatgagggt atcctttctt 120

ccgtgtccga gaaaaatgtt gctgctcacc catggcatga tttggagata ggaccagagg 180

ctcctgcagt gttcaattgt gtggttgaga ttcctagagg cagcaaggtt aagtatgagt 240

tggacaagat atctggtctg atcaaggtgg atcgtgtcct ttactcctct gttgtttacc 300

cac 303

<210>	418
<211>	290
<212>	nucleic acid

<213> Zea mays

<400> 418

ctcgaggccg ctccgccacc tcgccactcg cctcttctcg ctctcgccac cgggccaggg 60

aagggaccat ccgatcggct ccgtcatggc tggagctgct gctctcaatg agggtatcct 120

ttcttccgtg tccgagaaaa atgttgctgc tcacccatgg catgatttgg agataggacc 180

agaggctcct gaagtgttca attgtgtggt tgagattcct agaggcagca aggttaagta 240

tgagttggac aagatatctg gtctgatcaa ggtggatcgt gtcctttact 290

<210> 419
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 419

tggacagcag cagtgaactc gacgccgctc cgccacctcg ccactcgcct cttctcgctc 60

tcgccaccgg gccagggaag ggaccatccg atcggctccg tcatggctgg agctgctgct 120

ctcaatgagg gtatcctttc ttccgtgtcc gagaaaaatg ttgctgctca cccatggcat 180

gatttggaga taggaccaga ggctcctgaa gtgttcaatt gtgtggttga gattcctaga 240

ggcagcaagg ttaagtatga gttggacaag atatctggtc tgatcaaggt ggatcgtgtc 300

ctttactcc 309

<210> 420
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 420

ctcgaggccg ctccgccacc tcgccactcg cctcttctcg ctctcgccac cgggccaggg 60

aagggaccat ccgatcggct ccgtcatggc tggagctgct gctctcaatg agggtatcct 120

ttcttccgtg tccgagaaaa atgttgctgc tcacccatgg catgatttgg agataggacc 180

agaggctcct gaagtgttca attgtgtggt tgagattcct agaggcagca aggttaagta 240

tgagttggac aagatatc 258

<210> 421

<211> 293
<212> nucleic acid
<213> Zea mays

<400> 421

tgcagcagtg aactcgaggc cgctccgcca cctcgccact cgcctcttct cgctctcgcc 60

accgggccag gtgaagggac catccgatcg gctccgtcat ggctggagct gctgctctca 120

atgagggtat cctttcttcc gtgtccgaga aaaatgttgc tgctcaccca tggcatgatt 180

tggagatagg accagaggct cctgaagtgt tcaattgtgt ggttgagatt cctagaggca 240

gcaaggttaa gtatgagttg gacaagatat ctggtctgat caaggtggat cgt 293

<210> 422
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 422

gccctggaca gcagcagcga actcgaggcc gctccgccac ctcgccactc gcctcttctc 60

gctctcgcca ccgggccagg ggcgggacca tccgatcggc tccgtcatgg ctggagctgc 120

tgctctcaat gagggtatcc tttcttccgt gtccgagaaa aatgttgctg ctcacccatg 180

gcatgatttg gagataggac cagaggctcc tgaagtgttc aattgtgtgg ttgagattcc 240

tagaggcagc aaggttaagt atgagttgga caagatatct ggtctgatac aggtggatcg 300

tgtcctttac tcctc 315

<210> 423
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 423

ctcgaggccg ctccgccacc tcgccactcg cctcttctcg ctctcgccac cgggccaggg 60

aagggaccat ccgatcggct ccgtcatggc tggagctgct gctctcaatg agggtatcct 120

ttcttccgtg tccgagaaaa atgttgctgc tcacccatgg catgatttgg agataggacc 180

agaggctcct gaagtgttca attgtgtggt tgagattcct agaggcagca aggttaagta 240

tgagttggac aaga 254

<210> 424
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 424

cgccccggag ccctggacag cagcagtgaa ctcgaggccg ctccgccacc tcgccactcg 60

cctcttctcg ctctcgccac cgggccaggg aagggaccat ccgatcggct ccgtcatggc 120

tggagctgct gctctcaatg agggtatcct ttcttccgtg tccgagaaaa atgttgctgc 180

tcacccatgg catgatttgg agataggacc agaggctcct gaagtgttca attgtgtggt 240

tgagattcct agaggcagca aggtta 266

<210> 425
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 425

ggagccctgg acagcagcag tgaactcgag gccgctccgc cacctcgcca ctcgcctctt 60

ctcgctctcg ccaccgggcc agggaacgga ccatccgatc ggctccgtca tggctggagc 120

tgctgctctc aatgagggta tcctttcttc cgtgtccgag aaaaatgttg ctgctcaccc 180

atgcattgat ttggagatag gaccagaggc tcctgaagtg ttcaattgtg tggttgagat 240

tcctagaggc agcaaggtta 260

<210> 426
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 426

gttgccatta tatcagcata ttggctgggg cagacctctg gcttggtgga cgagtctggc 60

aacccaactg gtggtctttt tgggacagct gtagcaacaa tggggatgct tagcactgca 120

gggtatgttc tcaccatgga catgtttggt cctatagctg acaacgctgg tggtattgtt 180

gagatgagcc agcagcctga aagtgtgagg gaaatcacag atgttctaga tgctgtgggc 240

aacacaacta aagctactac gaaaggattt gccatagg 278

<210> 427
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 427

atcacccatg gccgttggcg ttgtcttccg gattttgggc cactacactg gtcagcctct 60

tcttggagct aaagttgtag cctccatgct gatgtttgcg acggtcgctg ggattctcat 120

ggcactcttg cttgaacact gctggcggcg cctgggataa tgcaaagaag tacattgaga 180

ctggcgctct tggtggcaag ggcagcgagt cccacaaggc tgcggttact ggcgacacgg 240

ttggagaccc attcaaagac actgctggac cgtcgct 277

<210> 428
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 428

ttttgtttca attgtcaggt ggttgagatt cctagaggca gcaaggttaa gtacgagttg 60

gacaaggcat ctggtctgat caaggtggac cgtgttcttt attcctctgt tgtttaccca 120

cataactatg gcttcattcc acgcacactc tgtgaggata acgacccccct ggatgtcctc 180

atactgatgc aggaacaagt tgtccctggg tgtttcctgc gagctcgtgc tattgggctc 240

atgcctatga tcgatcaggg cgaga 265

<210> 429
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 429

cacactgatc cggcctggag cgctggacag cagcagcagc atcgagctcg aggccgctcc 60

gccaccccgc actcgcctgt cgcctcttct cgctttcgcc accggggcag cgctccgcca 120

tggctggacc tgctgttctc aatgagcgta tcctttcttc catgtcccag aaacatgttg 180

ctgctcaccc atggcatgat ttggagatag gaccaggggc tcctgaattc ttcaattgtg 240

tggttgagat tcctagaggc agcaaggtta agtacgagtt ggacaaggca tctggtctga 300

tc 302

<210> 430
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 430

gctcgaggcc gctcgccacc ccgcactcgc ctgtagcctc ttctcgcttt cgccaccggg 60

gcagcgctcc gccatggctg gacctgctgt tctcaatgag cgtatccttt cttccatgtc 120

tcagaaacat gttgctgctc acccatggca tgatttggag ataggaccag gggctcctga 180

attcttcaat tgtgtggttg agattcctag aggcagcaag gttaagtacg agttggacaa 240

ggcatcttgt ctgatccagg tcgacgtgtt ctttattcct ctggtgg 287

<210> 431
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 431

cccacgcgtc cgcacactga tccggcctgg agcgctggac agcagcagca gcagcagcat 60

cgagctcgag gccgctccgc caccccgcac tcgcctgtcg cctcttctcg ctttcgccac 120

cggggcagcg ctccgccatg gctggacctg ctgttctcaa tgagcgtatc ctttcttcca 180

tgtcccagaa acatgttgct gctcacccat ggcatgattt ggagatagga ccaggggctc 240

ctgaattctt caattgtgtg gttgag 266

<210> 432
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 432

cccacgcgtc cgatcacact gatccggcct ggagcgctgg acagcagcag cagcagcagc 60

atcgagctcg aggccgctcc gccaccccgc actcgcctgt cgcctcttct cgctttcgcc 120

accggggcag cgctccgcca tggctggacc tgctgttctc aatgagcgta tcctttcttc 180

catgtcccag aaacatgttg ctgctcaccc atggcatgat ttggagatag gaccagggg 239

<210> 433
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 433

tgatccggcc tggagcgctg gacagcagca gcagcatcga gctcgaggcc gctccgccac 60

cccgcactcg cctgtcgcct cttctcgctt tcgccaccgg ggcagcgctc cgccatggct 120

ggacctgctg ttctcaatga gcgtatcctt tcttccatgt cccagaaaca tgttgctgct 180

cacccatggc atgatttgga gataggacca g 211

<210> 434
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 434

gacagcagca gcagcagcag catcgagctc gaggccgctc cgccaccccg cactcgcctg 60

tcgcctcttc tagctttcgc caccggggca gcgctccgcc atggctggac ctgctgttct 120

caatgagcgt atcctttctt ccatgtccca gaaacatgtt gctgctcacc catggcatga 180

tttggagata ggtggttgag attcctagag gcagcaaggt taagtacgag ttggacaagg 240

catctggtct gatcaaggtg 260

<210> 435
<211> 376
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (7)
<223>

<400> 435

gctctcncct caccgcctcc aggagatccg ccgcttcttc gaagactaca agaagaacga 60

gaacaaggag gtggccgtca acgacttcct gcccgccgcc gctgcccgcg aaccatccag 120

tactccatgg acctgtacgg ccagtacatc atgcagaccc tgcggcggta gagcgtgtcc 180

taccagatcc catgcgagct gagctgacgc aagagcacag atcgacagaa tccttgtggt 240

ctcgtctcat gcatggatag ccaggtcaca tggcttgtcg acgaccatgc atctcttctt 300

cccagcgatt ttagcctgta tcttccctta tttatagtct tttggggttg gtggaatctg 360

tccacagtgt ggtttg 376

<210> 436
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 436

cccacgcgtc cggcaggaac aagttgtccc tgggtgtttt ctgcgagctc gtgctattgg 60

gctcatgcct atgatcgatc agggtgagaa agatgataag atcatagctg tctgtgctga 120

tgaccctgaa ttccgtcact acaaggacat ctcggacctc cccccgcatc gccttcaaga 180

gatccgccgc ttttttgaag attataaaaa gaatgaaaac aaagaagttg cagtgaatga 240

tttcctccca gccgaagatg ccatcaaa 268

<210> 437
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 437

agatgataag attatagcag tctgtgctga tgaccctgaa ttccgtcact acacggacat 60

cacggacctc ccaccgcatc gccttcaaga gatccgccgc ttttttgaag attataaaaa 120

gaacgaaaac aaggaggtcg cagtgaatga gttcctgcca gcgaaagatg ccatcaacgc 180

aatcaagtac tcgatggacc tgtatggctc atacgtcatc gaaagcctga ggaagtgatc 240

tccagctg 248

<210> 438
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 438

gagataccaa ggggcagcaa ggttaaatat gaacttgaca agaaaactgg actgatcaag 60

gtggaccgtg tgctgtattc atcagttgtt taccctcaca actatggatt cattcctcgc 120

acgctttgtg aagacagtga tcctttggat gtactggtta taatgcagga gcctgttatc 180

ccaggctgtt tcctacgtgc gaaggccatc ggccttatgc cgatgattga tcagggagag 240

gcagatgaca agatcattgc agtgtgcgct gatg 274

<210> 439
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 439

caaggttaaa tatgaacttg acaagaaaac tggactgatc aaggtggacc gtgtgctgta 60

ttcatcagtt gtttaccctc acaactatgg attcattcct cgcacgcttt gtgaagacag 120

tgatcctttg gatgtactgg ttataatgca ggagcctgtt atcccaggct gtttcctacg 180

tgcgaaggcc atcggcctta tgccgatgat tgatcaggga gaggcagatg acaagatcat 240

tgcagtgtgc gctgatgatc ccgagtacag gcattacaat gatatcaagg ag 292

<210> 440
<211> 321
<212> nucleic acid
<213> Zea mays

<400> 440

ggcgcccgct gtagaagccg tgaaggagac aggcaccttc cagaaggttc ctgccttgaa 60

cgaaaggata ctgtcatcca tgtccaggag gtctgttgct gcacaccctt ggcatgatct 120

ggagataggt cctggtgctc caaccatatt caactgcgtc attgagatac caaggggcag 180

ctaggttaaa tatgaacttg acaagaaaac tggactgatc aaggtggacc gtgtgctgta 240

ttcatcagtt gtttaccctc acaactatgg attcattcct cgcacgcttt gtgaagacag 300

tgatcctttg gatgtactgg t 321

<210> 441
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 441

cacacccttg gcatgatctg gagataggtc ctggtgctcc aaccatattc aactgcgtca 60

ttgagatacc aaggggcagc aaggttaaat atgaacttga caagaaaact ggactgatca 120

aggtggaccg tgtgctgtat tcatcagttg tttaccctca caactatgga ttcattcctc 180

gcacgctttg tgaagacagt gatcctttgg atgtactggt tataatgcag gagcctgtta 240

tcccaggctg tttcctacgt gcgaaggcca tcggcc 276

<210> 442
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 442

ctggactgat caaggtggac cgtgtgctgt attcatcagt tgtttaccct cacaactatg 60

gattcattcc tcgcacgctt tgtgaagaca gtgatccttt ggatgtactg gttataatgc 120

aggagcctgt tatcccaggc tgtttcctac gtgcgaaggc catcggcctt atgccgatga 180

ttgatcaggg agaggcagat gacaagatca ttgcagtgtg cgctgatgat cccgagtaca 240

ggcattacaa tgatatcaag gagctcccac ct 272

<210> 443
<211> 270
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (23)
<223>

<400> 443

gatgtactgg ttataatgca ggngcctgtt atcccaggct gtttcctacg tgcgaaggcc 60

atcggcctta tgccgatgat tgatcaggga gaggcagatg acaagatcat tgcagtgtgc 120

gctgatgatc ccgagtacag gcattacaat gatatcaagg agctcccacc tcaccgcttg 180

gctgaaatca ggcgcttctt cgaggactac aagaagaatg agaacaagga ggttgctgtg 240

aatgactttc taccagcgag cgccgcttat 270

<210> 444
<211> 245
<212> nucleic acid

<213>   Zea mays

<400>   444

gcacgagatt cattcctcgc acgctttgtg aagacagtga tcctttggat gtactggtta   60

taatgcagga gcctgttatc ccaggctgtt tcctacgtgc gaaggccatc ggccttatgc 120

cgatgattga tcagggagag gcagatgaca agatcattgc agtgtgcgct gatgatcccg 180

agtacaggca ttacaatgat atcaaggagc tcccacctca ccgcttggct gaaatcaggc 240

gcttc   245

<210>   445
<211>   306
<212>   nucleic acid
<213>   Zea mays

<400>   445

ccgtgtgctg tattcatcag ttgtttaccc tcacaactat ggattcattc ctcgcacgct   60

ttgtgaagac agtgatcctt tggatgtact ggttataatg caggagcctg ttatcccagg 120

ctgtttccta cgtgcgaagg ccatcggcct tatgccgatg attgatcagg gagaggcaga 180

tgacaagatc attgcagtgt gcgctgatga tcccgagtac aggcattaca atgatatcaa 240

ggagctccca cctcaccgct tggctgaaat caggcgcttc ttcgaggact acaagaagaa 300

tgagaa   306

<210>   446
<211>   310
<212>   nucleic acid
<213>   Zea mays

<220>
<221>   unsure
<222>   (281)
<223>

<400>   446

caggctgttt cctacgtgcg aagccatcgg cttatgccga tgattgatca gggagaggca   60

gatgacaaga tcattgcagt gtgcgctgat gatcccgagt acaggcatta caatgatatc 120

aaggagctcc cacctcaccg cttggctgaa atcaggcgct tcttcgagga ctacaagaag 180

aatgagaaca aggaggttgc tgtgaatgac tttctaccag cgagcgccgc ttatgaagcc 240

atacagcact ctatggacct gtatgctaca tacatcgttg naggcatgag gaggtaagat 300

tctgatggct 310

<210> 447
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 447

gttccaacca tattcaactg cgtcattgag ataccaaggg gcagcaaggt tagctatgaa 60

cttgacaaga aaactggact gatcaaggtg gaccgtgtgc tgtattcatc agttgtttac 120

cctcacaact atggattcat tcctcgcacg ctttgtgaag acagtgatcc tttggatgta 180

ctggttataa tgcaggagcc tgtcatccca ggctgtttcc tacgtgcgaa ggccatcggc 240

tttatgccga tgattgatca gggagaggca gat 273

<210> 448
<211> 310
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (143)
<223>

<400> 448

atgaactgtt tgtgtcaccc atgttcctct gctccttggc actttctgat gcatgctcaa 60

atgcttaaga aagactcata gaagcgactc ctattcctat gccaggtcat tgagatacca 120

aggggcagca aggttaaata tgnacttgac aagaaaactg gactgctcaa ggtggaccgt 180

gtgctgtatt catcagttgt ttaccctcac aactatggat tcattcctcg cacgctttgt 240

gaagacagtg atcctttgga tgtactggtt ataatgcagg agcctgttat cccaggctgt 300

ttcctacgtg 310

<210> 449
<211> 192
<212> nucleic acid
<213> Zea mays

<400> 449

gcatgatctg gagataggtc ctggtgctcc aaccatattc aactgcgtca ttgagatacc 60

aaggggcagc aaggttaaat atgaacttga caagaaaact ggactgatca aggtggaccg 120

tgtgctgtat tcatcagttg tttaccctca caactatgga ttcattcctc gcacgctttg 180

tgaagacagt ga 192

<210> 450
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 450

gggtgatggt cccgagtgcg ggcgttgcgg tggtatcgag gggctcccgc ctcgccgctt 60

ggctgagatc aggcgcttct tcgaggactg cgagaagaat gagagcgagg cggctgctgt 120

gaatgacttt ctgccggcga gcgccgcttg tgaagccgtg cggcgctctg tgggcctgtg 180

tgctgcgtgc gtcgttgagg gcctgaggag gtaggattct gatgg 225

<210> 451
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 451

cgccgctgac ccaggttgtc ttgatggcgc ccgctgtaga agccgtgaag gagacaggca 60

ccttccagaa ggttcctgcc ttgaacgaaa ggatactgtc agccatgtcc aggaggtctg 120

ttgctgcaca cccttggcat gatctggaga taggtcctgg tgctccaacc atattcaact 180

gcgtcattga gataccaagg ggctactagg ttaaatatga acttgacaag aaaactggac 240

tgat 244

<210> 452
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 452

cggctccgtc gtcgcgtgcc atcctagggt ttctttcccc gtcggcgcct ccccagattt 60

ggccgccgcc gccgctgacc caggttgtct tgatggcgcc cgctgtagaa gccgtgaagg 120

agacaggcac cttccagaag gttcctgcct tgaacgaaag gatactgtca tccatgtcca 180

ggaggtctgt tgctgcacac ccttggcatg atctggagat aggtcctggt gctccaacca 240

tattcaactg cgtcattgag ataccaaggg gcagcaaggt taaatatgaa cttgacaaga 300

aaactggact g 311

<210> 453
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 453

agctccgtcg tcgcgtgcca tcctagggtt tctttccccg tcggcgcctc cccagatttg 60

gccgccgccg ccgctgaccc aggttgtctt gatggcgccc gctgtagaag ccgtgaagga 120

gacaggcacc ttccagaagg ttcctgcctt gaacgaaagg atactgtcat ccatgtccag 180

gaggtctgtt gctgcacacc cttggcatga tctggagata ggtcctggtg ctccaaccat 240

attcaactgc gtcattgaga taccaagggg cagcaaggtt aaatatgaac ttgacaagaa 300

a 301

<210> 454
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 454

ctgaaatcag gcgcttcttc gaggactaca agaagaatga gaacaaggag gttgctgtga 60

atgactttct accagcgagc gccgcttatg aagccataca gcactctatg gacctgtatg 120

ctacatacat cgttgagggc ctgaggaggt aggattctga tggctaggaa aggtggggag 180

gatgttgacg aaaaactggg agaccattta ccgcatggaa cgagtaccgt tattatttta 240

tttgtgtcgt gtatactgct agtagtgaac cctcaatcaa agaccgaaat 290

<210> 455
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 455

ccagatttgg ccgccgccgc cgctgaccca ggttgtcttg atggcgcccg ctgtagaagc 60

cgtgaaggag acaggcacct tccagaaggt tcctgccttg aacgatagga tactgtcatc 120

catgtccagg aggtctgttg ctgcacaccc ttggcatgat ctggagatag gtcctggtgc 180

tccaaccata ttcaactgcg tcattgagat accaggggca gcaaggttag atatgaactt 240

gacaagaaa 249

<210> 456
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 456

ctgacgcgtg ggcggacgcg tgggcggctc cgtcgtcgcg tgccatccta gggtttcttt 60

ccccgtcggc gcctccccag atttggccgc cgccgccgct gacgcaggtt gtcctatatg 120

gcgcccgctg tagaagccgt gaaggagaca ggcaccttcc agaaggttcc tgccttgaac 180

gaaaggatac tgtcatccat gtccaggagg tctgttgctg cacacccttg gcatggtctg 240

gagataggtc ctggtgctcc aaccatattc aactgcgtca ttgagatacc aaggggcagc 300

aaggttaaat at 312

<210> 457
<211> 359
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (326)
<223>

<400> 457

aggaaataga aagtctccct ggactctaaa atcaatgcct gtgaacacat gaactgtttg 60

tgtcacccat gttcctctgc tccttggcac tttctgatgg atgctcaaat gcttaagaaa 120

gactcataga agcgactcct attcctatgc caggtcattg agataccaag ggcagcaag 180

gttaaatatg gacttgcaag aaaactggac tgatcaaggt ggaccgtgtg ctgtattcat 240

cagttgttta ccctcacaac tatggattca ttcctcgcac gctttgtgaa gacagtgatc 300

ctttggatgt actggttata atgcangagc ctgttatccc aggctgtttc ctacgtgcg 359

<210> 458
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 458

gactagttct agatcccggc tccgtcgtcg tcgtgccatc ctagggtttc tttccccgtc 60

ggcgcctccc cagatttggc cgccgccgcc gctgacccag gttgtcttga tggcgcccgg 120

ctgtagaagc cgtgaaggag acaggcacct tccagaaggt tcctgccttg aacgaaagga 180

tactgtcatc catgtccagg aggtctgttg ctgcacaccc ttggcatgat ctggagatag 240

gtcctggtgc tccaaccata ttcaactgcg tcattgagat accaaggggc agc 293

<210> 459
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 459

actagttcta gatcccggct ccgtcgtcgc gtgccatcct agggtttctt tccccgtcgg 60

cgcctcccca gatttggccg ccgccgccgc tgacccaggt tgtcttgatg gcgcccgctg 120

tagaagccgt gaaggagaca ggcaccttcc agaaggttcc tgccttgaac gaaaggatac 180

tgtcatccat gtccaggagg tctgttgctg cacacccttg gcatgatctg gagataggtc 240

ctggtgctcc aaccatattc aactgcgtca ttgagatacc aaggggcagc 290

<210> 460
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 460

cggctcgagg gctccgtcgt cgcgtgccat cctagggttt ctttccccgt cggcgcctcc 60

ccagatttgg ccgccgccgc cgctgaccca ggttgtcttg atggcgcccg ctgtagaagc 120

cgtgaaggag acaggcacct tccagaaggt tcctgccttg aacgaaagga tactgtcatc 180

catgtccagg aggtctgttg ctgcacaccc ttggcatgat ctggagatag gtcctggtgc 240

tccaaccata ttcaactgcg taaggccacc ctgtcat 277

<210> 461
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 461

cggacgctgg gcggctccgt cgtcgcgtgc catcctaggg tttctttccc cgtcggcgcc 60

tccccagatt acgccgccgc cgccgctgac ccaggttgtc ttgatggcgc ccgctgtaga 120

agccgtgaag gagacaggca ccttccagaa ggttcctgcc ttgaacgaaa ggatactgtc 180

atccatgtcc aggaggtctg ttgctgcaca cccttggcat gatctggaga taggtcctgg 240

tgctccaacc atattcaact gcgtc 265

<210> 462
<211> 183
<212> nucleic acid
<213> Zea mays

<400> 462

gctgaaatca ggcgcttcta cgaggactac aagaagaatg agaacaagga ggttgctgtg 60

aatgactttc taccagcgag cgccgctatg aagccataca gcactctatg gacctgtatg 120

ctacatacat cgttgagggc ctgaggaggt aggattctga tggctaggaa aggtggggag 180

gat 183

<210> 463
<211> 291
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (261)
<223>

<400> 463

caatgattga tgagggagag cttgactgga aaattgtggc catttctttg gatgacccga 60

aagcatctct tgtgaacgac gtggatgatg ttgagaagca ttttccgggg acactgactg 120

ccatcagaga ctggttcaga gactacaaga tacctgatgg aaagcctgcc aacaaatttg 180

gtctcggcaa caagcccgca agcaaggaat acgccctgaa ggtcattcaa gagaccaacg 240

aatcatggga gaaattggta nagagaaata ttcccgctgg agagctctcg t 291

<210> 464
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 464

ccgaaagcat ctcttgtgaa cgacgtggat gatgttgaga agcattttcc ggggacactg 60

actgccatca gagactggtt cagagactac aagatacctg atggaaagcc tgccaacaaa 120

tttggtctcg gcaacaagcc cgcaagcaag gaatacgccc tgaaggtcat tcaagagacc 180

aacgaatcat gggagaaatt ggtaaagaga aatattcccg ctggagagct ctcgttggcc 240

tgattttggc ccatggaagc caccacattc ttttgaactg c 281

<210> 465
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 465

tgttgagaag cattttccgg ggacactgac tgccatcaga gactggttca gagactacaa 60

gatacctgat ggaaagcctg ccaacaaatt tggtctcggc aacaagcccg caagcaagga 120

atacgccctg aaggtcattc aagagaccaa cgaatcatgg gagaaattgg taaagagaaa 180

tattcccgct ggagagctct cgttggcctg attttggccc atggaagcca ccacattctt 240

ttgaactgct ttcgtgagca tgtcgtttt 269

<210> 466
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 466

gacccaactt ctgcaaattc tgaggttgaa ggagcgtttg gggataatga tcctgttgat 60

gttgttgaga tcggtgaaag acgtgccaat gtcggggatg ttcttaaggt taagccattg 120

gcagctttag caatgattga tgagggagca gcttgactgg aaaattgtgg ccatttcttt 180

ggatgacccg aaagcatctc ttgtgaacga cgtagatgat gttcaacagc ttttccgggg 240

acactactgc catcaga 257

<210> 467
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 467

gtttgccgat cgagcccggg cgacgtgaga tacgagcggc gtcgaccggc gccggcgagc 60

ctccgcagcc gcagccgccc gatctgggtt ttctttcgta gcggtagcgc aagatgagcc 120

aggaccagga gaacggaggc accaacgggc agcacgccgc cgacgtcatg gaggtggagc 180

cgaagcgccg ggcgccgcgg ctgaacgagc gcatcctgtc gtcgctgtcg cggaggtccg 240

tcgccgcgca cccctggcac gacctcgaga tcggtcctga agctccggcc gtcttcaacg 300

tcgtcgtgga gatcaccaag gggag 325

<210> 468
<211> 227
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (7)
<223>

<400> 468

cgtagtntag cggaagatga gccaggacca ggagaacgga ggcaccaacg ggcagcacgc 60

cgccgacgtg atggaggtgg agccgaagcg ccgggcgccg cggctgaacg agcgcatcct 120

gtcgtcgctg tcgcggaggt ccgtcgccgc gcacccctgg cacgacctcg agatcggtcc 180

tgaagctccg gccgtcttca acgtcgtcgt ggagatcacc aaggggga 227

<210> 469
<211> 462
<212> nucleic acid
<213> Zea mays

<220>

<221> unsure
<222> (45)
<223>

<400> 469

agttgtgtat gtcacggtct gatgcgcgcc actctcacat gcctncgcct gtcaggcagc 60

gccaccggct ctgtttcgtc atggttatga caaaagtgga tgcagttctc cgttgccgat 120

tctcggaatc ggtttctcga ttgatgcctg aaatttcatc atgattagcg tttatgggtg 180

atttcaacga tgagggggtt cccaagggct atgctttccc tctcacgatg cctactgtta 240

ctctgattga gtgaagattt gcaaccttca ctcacaggtc agctgctgca catccgtggc 300

atttcgtgta gattgttcca taagcgccta ctgttttcaa ctgtgtagtt gtcattatca 360

agagtagtac ggttaagtat gagctacaca cagacagtag acttaattgg gctgatcacg 420

ttctctattc aaccattatt tacccccaaa gctacggttt ca 462

<210> 470
<211> 408
<212> nucleic acid
<213> Zea mays

<400> 470

gggtggcgta cttcacgtcg cggtgcggtc tacaattaga gtcgagcacg cgtccgatca 60

tagtccgtgt acgcgtccaa tgacgtctct tgcacagcgc accataactc agcatttact 120

gaacatggac tgcagctccc ctcggaggcg tcctcgctgg catgagcggg agaggagcta 180

ctggtactac atctaatagc atggactggt ctggtgaatg tggaccgtct gctttaatca 240

tcaattattt aagctcataa ctatggattc attcctcaca cgctttgtga acacagtgat 300

cctttggatg tactggttat aatgcaggag cctgttatcc caggctgttt cctatgtgcg 360

attgcaatcg gccttatccc gaatattgat cagggagaag cagatgac 408

<210> 471
<211> 424
<212> nucleic acid
<213> Zea mays

<400> 471

agcgtcaccg tcctggtgat cacgcccaga tcaaatccta ttcaaatttg gagcgcaata 60

tggctgaaga gaagagccgt ccgcggctga acgagcggat catgtcgtcc ctctcaaagc 120

ggtcggtcgc tgcgcattcc tggcatgacc ttgagatagg acctggagcc cctgctgttt 180

tcaattgtgt tgttgagatc acaaagggca gtaaagtgaa atatgagcta gacaagaaga 240

ccggaatgat caaggttgac agggtgctat actcatcagt ggtctaccca cacaactacg 300

gtttcattcc acgaacattg tgtgaagacg gagatccaat ggatgtgctg gtgttgatgc 360

aggaaccggt gatacctggc tgttttcttc gggcaagggc catcggcctt atgcccatga 420

ttga 424

<210> 472
<211> 472
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (12)...(14),(33),(52)
<223> unsure at all n locations

<400> 472

agaaatggtg tnnncctaaa tctcagcctg atnctttacc actccctccg gnatccgggc 60

aagcgccgga tccacgcgtc ccgtgactcg tggtcggtgc cccgttgcgt ctctgtaaaa 120

ccagacggcg aaccactgct gcggtccact gcatcccggg tccgtcttct cgtgccatgc 180

tacggttgct ttctcccgtc ggcgcctgcg cagatttggc cgccgtcgcc gctgacccag 240

gctgtcttga tggcgcccga tgcagaagcc gctaagggga caggcaccgt tccacaaagg 300

tgctctgcca ttgaacgaaa ggatactggc atgcatgtcc aggaggtctg ctgctggaca 360

cccttggcat gatctggaga taggccctgg agctccaacc atattcaact gcgtcattga 420

gatacccagg ggcagcaagg tttaatatga acttgacaag gaaactggac tg 472

<210> 473
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 473

catgtacacc gtcttaagag agttaaatgt tagtgcttgc ctcctgttag attgaatggg 60

cggtttaacc gagacattca gacaagaaga atgagaacaa ggaggttgct gcgaatgact 120

ttctaccagc gagcgccgct tatgaagcca tacagcactc tatggacctg tatgctacat 180

acatcgcttg agggcctgaa gaggtaggat tctgatggct aggaaaggtc gcgaggatg 239

<210> 474
<211> 429
<212> nucleic acid
<213> Zea mays

<400> 474

cccacgcgtc cgccgaaact ccgacagtcc gaccacaaga aggatgagtg aagaggatga 60

gactgctgct tctgctgagc agccgaagag ggcccctaag ctcaatgaaa ggatcctctc 120

ttctctgtcc aggaggtccg tagctgctca tccatggcat gatcttgaga tcggtcctga 180

tgctcctgct gttttcaatg ttgttgttga gatcacaaag ggaagcaaag ttaaatatga 240

gcttgacaag aaaactggac tgattaaggt tgatcgagtc ctgtactcat cagttgtata 300

ccctcacaat tatggtttcg ttccaaggac tctttgtgaa gacaatgacc caatggatgt 360

gttagtcctg atgcaggagc ctgttgttcc tggttcgttc ctgcgagcaa gagcaatcgg 420

ccttatgcc 429

<210> 475
<211> 399
<212> nucleic acid
<213> Zea mays

<400> 475

cggcccacct ggaagccgga gagaatcgag catagccacc gatcgctcct ctccactggg 60

cagattccag ttccactccg cctccgctgc cggtcgccga ctccgaaact ccgacagtcc 120

gaccacaatg atccacatat agatgagtgg agaggataag gctgctgctt ctgctgagca 180

gccgaagagg gcccctaagc tcaatgaaag gatcctctct tctctgtcca ggaggtccgt 240

agctgctcat acgtggcatg atcttgagat cggtcctgat gctcctgctg ttttcaatgt 300

tgatgttgag atcacaaagg gaagcaaagt taaatatgag ctcgacaaga aaactggact 360

gattaaggtt gatcgagtcc tgtactcatc agttgtata 399

<210> 476
<211> 390

<212> nucleic acid
<213> Zea mays

<400> 476

ccgcagtgca ggactgagga tgagtgaaga ggataaggct gctgcttctg ctgagcggcc 60

taagagggcc cctaagctca atgaaaggat cctctcctct ctgtccagga ggtccgtagc 120

tgctcatcca tggcatgatc tcgagatcgg tcctggtgct cctgctgtat tcaatgttgt 180

tgttgagatc acaaagggaa gcaaagtcaa atacgagctt gacaagaaaa ctggactgat 240

taaggttgat cgagtccttt actcatcagt tgtataccct cacaattatg gtttcattcc 300

aaggactctt tgtgaagaca atgacccaat ggatgtgttg gtcctgatgc aggagcctgt 360

tgttcctggt tcgttcctga gagctagagc 390

<210> 477
<211> 398
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (336),(376)
<223> unsure at all n locations

<400> 477

cggacgcgtg ggcggacgcg tgggcggacg cgtgggccga tcgctcctct ccactgtcca 60

gattccagtt ccactccgcc tccgctgccg gtcgccgact ccgaaactcc gacagtccga 120

ccacaaggtc ttgtgcggga tccacagaag gatgagtgaa gaggataaga ctgctgcttc 180

tgctgagcag ccgaagaggg cccctaagct caatgaaagg atcctctctt ctctgtccag 240

gaggtccgta gctgctcatc cgtggcatga tcttgagatc ggtcctgatg ctcctgctgt 300

tttcaatgtt gttgttgaga tcacaaaggg aagcanagtt aaatatgagc ttgacaagaa 360

aactggactg attaanggtg atcgagtcct atactcat 398

<210> 478
<211> 362
<212> nucleic acid
<213> Zea mays

<400> 478

gggaagcaaa gttaaatatg agcttgacaa gaaaactgga ctgattaagg ttgatcgagt 60

cctatactca tcagttgtat accctcacaa ttatggtttc gttccaagga ctctttgtga 120

agacaatgac ccattggatg tgttggtcct gatgcaggag cctgttattc ctggttcgtt 180

cctgcgagca agagcaatcg gccttatgcc catgattgac cagggtgaaa aggatgacaa 240

gataatagca gtctgtgctg atgatcctga atatcgtcac tacaacgaca tcagtgagct 300

gtcttctcat cgcctgcaag agatcaagcg gttctttgaa gattattaga agaatgaaga 360

tt 362

<210> 479
<211> 410
<212> nucleic acid
<213> Zea mays

<400> 479

gacccaatgg atgtgttggt cctgatgcag gagcctgttg ttcctggttc gttcctgaga 60

gctagagcaa ttggccttat gcccatgatt gaccagggtg aaaaggatga caagataata 120

gcagtatgtg ctgacgatcc tgaataccgt cactacaacg acatcagcga gctgtctcct 180

caccgcctgc aagagatcaa gcgcttcttt gaagattaca agaaaaacga gaacaaagaa 240

gtcgcagttg atgcattctt gcccgcgaca acagctcaag aagccattca gtactccatg 300

gacctgtatg cccagtatat tttgcaaagc ttgaggcagt agattgcaag caacaattta 360

tctatcatgc gtcttggatc ggggcgtgat tttaataagc cgaatcgctt 410

<210> 480
<211> 373
<212> nucleic acid
<213> Zea mays

<400> 480

gctcctctcc actttccaca ttccagttcc actccgactg cgctgccggt cgccgactcc 60

gaaactccga cagtccgacc acaaggtctt gtgcgggatc cacagaagga tgagtgaaga 120

ggataagact gctgcttctg ctgagcagcc gaagagggcc cctaagctca atgaaaggat 180

cctctcttct ctgtccagga ggtccgtagc tgctcatcca tggcatgatc ttgagatcgg 240

tcctgatgct cctgctgttt tcaatgttgg tgttgagatc acacagggat gcaaagctta 300

atatgaactt gacaagaaaa ccggactgat taagggtgat cgagtcctgg acttatcagt 360

tgtataccct tac 373

<210> 481
<211> 428
<212> nucleic acid
<213> Zea mays

<400> 481

cccactctcc gaaggactct ttgtgaatac aatgacccaa tggatgtgtt ggtcctgatg 60

catgagcctg ttgttcctgg ttcgttcctg agagctagag caattggcct tatgcccatg 120

attgaccagg gtgaaaagga tgacaagata atagcagtat gtgctgacta tcctgaatac 180

cgtcactaca acgacatcag cgagctgtct cctcaccgcc tgcaagagat caagcgcttc 240

tttgaagatt acaagaaaaa cgagaacaaa gaagtcgcag ttgatgcatt cttgcccgcg 300

acaacagctc aagaagccat tcagtactcc atggacctgt atgcccagta tattttgcaa 360

agcttgaagc agtagattgc aagcaacaat ttatctatca tgcgtcttgg atcggggcgt 420

gattttaa 428

<210> 482
<211> 384
<212> nucleic acid
<213> Zea mays

<400> 482

aggtcaatac aacgacatca gcgagctgtc tcctcaccgc ctgcaagaga tcaagcgctt 60

ctttgaagat tacaagaaaa acgagaacaa agaagtcgca gttgatgcat tcttgcccgc 120

gacaacagct caagaagcca ttcagtactc catggacctg tatgcccagt atattttgca 180

aagcttgagg cagtagattg caagcaacaa tttatctatc atgcgtcttg gatgggggcg 240

tgattttaat aagccaaatc gcttgctata ttgggaacct tggaattgag aacagcgtca 300

ctagctgtga ttcgctcctt tctcgttaaa ttatcatatg aataggccaa gtccatacgt 360

ttaccgtgtg gcgctctgtc agtc 384

<210> 483
<211> 435
<212> nucleic acid

<213> Zea mays

<400> 483

ggtttgcagg cgttgtcttc cggattttgg tccactacac tggtcagcct cttcttggag 60

ctaaagttgt agcctccatg ctgatgtttg cgacggtcgc tgggattctc atggcactct 120

tcttgaacac tgctggcggc gcctgggata atgcacagaa gtacattgag actggcgctc 180

ttggtggcaa gggcagcgag tcccacaagg ctgcggttac tggcgacacg gttggagacc 240

cattcaaaga cactgctgga ccgtcgctgc atgttcttat caagatgctc gccacaatca 300

cgctggtcat ggctccgata ttcttgtgat taaccaacca ctcatcaagc ttgctattaa 360

ccctgcggag atgtacctat gcgaccaggt agatgaggtg tgtgtgtgtg tgtgttacct 420

gcatgtgatg atgta 435

<210> 484
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 484

cggacgcgtg cgctcacgtg gttgagtctc ctatttgcag caaggttaag tacgacggcg 60

acagggcatc tggtctgatc aaggtggacc gtgttcttta ttcctctgtt gtttacccac 120

ataactatgg cttcattcca ctgcacactc tgtgaggata acgacccccct ggatgtcctc 180

atactgatgc aggaacaagt tgtccctgtg tgattcctgc gagctcgtgc tattgggctc 240

atgcctatga tcgatcaggt ctagtgtctt cgtcacctga tcgcatagtg cttgctatgt 300

ttaccttagg ccatatattt tt 322

<210> 485
<211> 441
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (190),(198),(250)
<223> unsure at all n locations

<400> 485

gggacaacgc caagaagtac attgaggctg gagtttcaga gcatgccaag acccttggcc 60

caaaagggtc tgaccctcac aaggcggctg tcattggtga caccattgga gatccctcta 120

aggacacgtc tggccctttc ctcaacatcc tcatcaagct tatggcggtt gaatcccttg 180

tcttcgcccn cttcttcngc cgccatggtg gcattctctt caaatggctc taagccagcg 240

agagacgcan gataaaagcc gtagttttgc aaggcgagta gagcagtatg tcagtaatac 300

agcatctatg gcatgtgctt ttgctcgtcc agttcatgag ccccgttgtg tatttggttt 360

ccgttttctt ggttggagtt tttagttcca aagtccgatc atgttttgat cccataaatt 420

ctcttccagc cttcgagcaa c 441

<210> 486
<211> 468
<212> nucleic acid
<213> Zea mays

<400> 486

atcgccgtgt gcgccgacga ccccgagtac cgtcactaca acgacatcag cgagctctgc 60

cctcaccgcc tacaggagat ccgccgcttc ttcgaagact acaagaagaa cgagaacaag 120

gaggtggccg tcaacgactt cctgcccgcc gccgctgccc gcgaagccat ccagtactgc 180

atggacctgt acgggcagta catcatgcag accctgcggc ggtagagcgt gtcctaccag 240

atcccatgcg agctgagctg acgcaagagc acagatcgac agaatccttg tggtctagtc 300

tcatgcatgg atagccaggt cacatggctt gtcgacgacc atgcatctgt tcttcccagc 360

gattctagcc tgtatctgcc cttatttata gtctcttggg tttggtggaa tctgtccaca 420

gtgtggcttg atctatgtac tactcttcta catttctacc agaacgaa 468

<210> 487
<211> 481
<212> nucleic acid
<213> Zea mays

<400> 487

gcctggcgca gcgtcagttg ccagcacggt ctagcaatcc ggtcggccac gcgtccgagg 60

aaacgtgggc ggacgcgtgg gcacgcacac tctgtgagga taacgacccc ctgaatgtcc 120

tcatactgat gcaggaacaa gttgtccctg ggtgtttcct gcaagctcgt gctattgggc 180

tcatgcctat gatcgatcag ggcgagaaag atgataagat tatagcagtc tgtgctgatg 240

acccctgaatt ccgtcactac acggacatca cggacctccc accgcatcgc cttcaagaga 300

tccgccgctt ttttgaagat tataaaaaga acgaaaataa ggaggtcgca gtgaatgagt 360

tcctgccagc gaaagatgcc atcaacgcaa tcaagtactc gatggacctg tatggctcat 420

acgtcatcga aagcctgagg aagtgatctc cagctgcttg attgtggttg tggatgctac 480

a 481

<210> 488
<211> 416
<212> nucleic acid
<213> Zea mays

<400> 488

cccacgcgtc cgcatccatg tccaggaggt ctgttgctgc acacccttgg catgatctgg 60

agataggtcc tggtgctcca accatattca actgcgtcat tgagatacca aggggcagca 120

aggttaaata tgaacttgac aagaaaactg gactgatcaa ggtggaccgt gtgctgtatt 180

catcagttgt ttaccctcac aactatggat tcattcctcg cacgctttgt gaagacagtg 240

atcctttgga tgtactggtt ataatgcagg agcctgttat cccaggctgt ttcctacgtg 300

cgaaggccat cggccttatg ccgatgattg atcagggaga ggcagatgac aagatcattg 360

cagtgtgcgc tgatgatccc gagtacaggc attacaatga tatcaaggag ctccca 416

<210> 489
<211> 400
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (303),(368),(381)
<223> unsure at all n locations

<400> 489

cccacgcgtc cgtggattca ttcctcgcac tctttgtgaa gacagtgatc ctttggatgt 60

actggttata atgcaggagc ctgttatccc aggctgtttc ctacgtgcga aggctatcgg 120

ccttatgccg atgattgatc agggagaggc agatgacaag atcattgcag tgtgcgctga 180

tgatcccgag tacaggcatt acaatgatat caaggagctc ccacctcacc gcttggctga 240

aatcaggcgc ttcttcgagg actacaagaa gaatgagaac aaggaggttg ctgtgaacga 300

ctntctacca gcgagcgccg cttatgaagc catacagcac tctatggatc tgtatgctac 360

atacatcngt gagggcctga ngaggtaaga ttctgatggc 400

<210> 490
<211> 457
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (425)
<223>

<400> 490

acgctttccc cgtcggcgcc tactcagatt taattcggac gccgccgccg ccgctgaccc 60

agggggtctt gatggcgccc gctgtagaag ccgttaagga gacaggctcg ttccagaagg 120

ttcctgcctt gaacgaaagg atactgtcat ccatgtccag gaggtctgtt gctgcacacc 180

cttggcatga tctggagata ggtcctggtg ctccaaccat attcaactgc gtcattgaga 240

taccaagggg cagcaaggtt aaatatgaac ttgacaagaa aactggactg atcaaggtgg 300

accgtgtgct gtattcgtca gttgtttacc ctcacaacta tggattcatt cctagcactc 360

tctgtgaaga cagtgatcct ttggatgtac tggttataat gcatgagcct gttatcccat 420

gctgnttcct acgtgcgaag gctatcggcc ttatgcc 457

<210> 491
<211> 445
<212> nucleic acid
<213> Zea mays

<400> 491

cactgatcaa ctgcaacgca atgacgagac tcatgggtcg acgcaagact ctagagtgaa 60

tgctatcagc cttatgccga tgattgatca gggagaggca gatgacaaga tcattgcagt 120

gtgcgctgat gatcccgagt acaggcatta caatgatatc aaggagctcc cacctcaccg 180

cttggctgaa atcaggcgct tcttcgagga ctacaagaag aatgagaaca aggaggttgc 240

tgtgaatgac tttctaccag cgagcgccgc ttatgaagcc atacagcact ctatggacct 300

gtatgctaca tacatcgttg agggcctgag gaggtatgat tctgatggct aggaaaggtg 360

gggaggatgt tgacgaaaaa ctgggagacc atttaccgca tggaacgagt accgttatta 420

ttttatttgt gtcgtgtata ctgct 445

<210> 492
<211> 411
<212> nucleic acid
<213> Zea mays

<400> 492

acgctttccc cgtcggcgcc tcctcagatt taatttggac gccgtcggcg ccgctgaccc 60

aggtggtctt gatggcgccc gctgtagaag ccgtgaagga gacaggctcg ttccatatgg 120

ttcctgcctt gaacgaaagg atactgtcat ccatgtccag gaggtctgat gctgcacacc 180

cttggcatga tctggagata gcgtcctggt gcttcaacca tattcaactg cgtcattgag 240

ataccaaggg gcagcaaggt taaatatgaa cttgacaaga aaactggact gatcaaggtg 300

gaccgtgtgc tgtattcgac agttgtttac cctgacaact atggattcat tcctcgcact 360

ctttgcgaag acagtgatcc ttttgatgta ctgggtatta ttcaagaacc t 411

<210> 493
<211> 423
<212> nucleic acid
<213> Zea mays

<400> 493

atcaggcgct tcttgtagtc ctcgaagaag cgcctgattt cagccaagcg gtgaggtggg 60

agctccttga tatgattgta atgcctgtac tcgggatcat cagcgcacac tgcaatgatc 120

ttgtcatctg cctctccctg atcaatcatc ggcataaggc cgatagcctt cgcacgtagg 180

aaacagcctg ggataacagg ctcctgcatt ataaccagta catccaaagg atcactgtct 240

tcacaaagag tgcgaggaat gagaacaagg aggttgctgt gaacgacttt ctaccagcga 300

gcgccgctta tgaagccata cagcactcta tggatctgta tgctacatac atcgttgagg 360

gcctgaggag gtaggattct gatggctagg aaagtgggga ggatgttgac gaaaaactgg 420

gag 423

<210> 494
<211> 340

<212> nucleic acid
<213> Zea mays

<400> 494

acgcggacgc gtgggcggac gcgtgggcgg acgcgtgggc tttccccgtc ggcgcctccc 60

cagatttggc cgccgccgcc gctgacccag gttgtcttga tggcgcccgc tgtagaagcc 120

gtgaaggaga caggcacctt ccagaaggtt cctgccttga acgaaaggat actgtcatcc 180

atgtccagga ggtctgttgc tgcacaccct tggcatgatc tggagatagg tcctggtgct 240

ccaaccatat tcaactgcgt cattgagata ccaaggggca gcaaggttaa atatgaactt 300

gacaagaaaa ctggactgat tcaaggtgga cgtgtgctgt 340

<210> 495
<211> 438
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (36),(108)
<223> unsure at all n locations

<400> 495

ctgggaacgt tacccagcgg tcaccgtgct agcatncggg taccaccacg cgtccgcaga 60

cgcgtggacg cgtgccatcc tagggtttct ttccccgtcg gcgcctcncc agatttggcc 120

gccgccgccg ctgacccagg ttgtcttgat ggcgcccgct gtagaagccg tgaaggagac 180

aggcaccttc cagaaagttc ctgccttgaa cgaaaggata ctgtcatcca tgtccaggag 240

gtctgttgct gcacaccctt ggcatgatct ggagataggt cctggtgctc caaccatatt 300

caactgcgtc attgagatac caaggggcag caagggtata atatgaactt ggaggggaag 360

actggactga ttcaagtgga ccgtgtgctg tattcaacag ttgtttaccc tcacaacaat 420

ggattcattc ctcgcacg 438

<210> 496
<211> 419
<212> nucleic acid
<213> Zea mays

<400> 496

ggccatttct ttggatgacc cgaaagcatc tcttgtgaac gacgtggatg atgttgagaa 60

gcattttccg gggacactga ctgccatcag agactggttc agagactaca agatacctga 120

tggaaagcct gccaacaaat ttggtctcgg caacaagccc gcaagcaagg aatacgccct 180

gaaggtcatt caagagacca acgaatcatg ggagaaattg gtaaagagaa atattcccgc 240

tggagagctc tcgttggcct gattttggcc catggaagcc accacattct tttgaactgc 300

tttcgtgagc atgtcgtttt gtatgctgtg accatgcttc ttcgtttgca ttccaaacct 360

tttttacgaa ctgtttaaca aaaatgatct tgtcggataa ataatgattc tggtgcgag 419

<210> 497
<211> 428
<212> nucleic acid
<213> Zea mays

<400> 497

cacacgcgtc cggggaggac ccaacttctg caaattctga ggttgaagga gcatttgggg 60

ataatgatcc tgttgatgtt gttgagatag gtgaaagacg tgccaatgtc ggggacgttc 120

ttaaggttaa gccattggca gctttagcaa tgattgatga gggagagctt gactggaaaa 180

ttgtggccat ttctttggat gacccgaaag catctcttgt gaacgacgtg gatgatgttg 240

agaagcattt tccggggaca ctgactgcca tcagagactg gttcagagac tacaagatac 300

ctgatggaaa gcctgccaac aaatttggtc tcggcaacaa gcccgcaagc aaggaatacg 360

ccctgaaggt cattcaagag accaacgaat catgggagaa attggtaaag agaaatattc 420

ccgctgga 428

<210> 498
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 498

ccaaggagct cgcgggaggc ctgcagcagc ggcgggccct gtaccagccc cgcctcccgc 60

catgcctcca gggaccgacg gtaagggcgg agtacggtga cgcgaccaca accatcgatc 120

ccacctgtgc ccaagccgtc gcgcaggcct tcccgcacac ctttggccag ccgctcgtca 180

tcttcgtcgc gccggccgcc ggcgccggcg ccgttagagg agcgccaccc gatcagggtg 240

ggcgtggtgt tctctgggag gcagtcgccg ggatggcaca acgtcgtctg gggcctccat 300

gacgcactta aag 313

<210> 499
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 499

cccacgcgtc cggatcagag gaggcatccg tgaccaaaga tcgagtagcc aagaagaaga 60

gagatgaacg ccgacttcgg cgcgcccaag gagctcgcgg gaggcctgca gcagcggcgg 120

gccctctacc agccccgcct cccgccatgc ctccagggac cgacggtaag ggcggagtac 180

ggtgacgcga ccacaaccat agatcccacc tgtgcccaag ccgtcgcgca ggccttcccg 240

cacacctttg gccagc 256

<210> 500
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 500

cccacgcgtc cggaacagac gtttgaagga gggcacttac aaaggaaaga aagttaatgc 60

aatctgtcac ttctttggct accaagctag gggagcactg ccttccaagt ttgactgcga 120

ttatgcctat gtcttggggc atgtgtgcta ccacatcata gctgccggtt tgaacggtta 180

catgggcaca gtgacaaatg ttaagagtcc agtgaacaag tggcgatgtg gtgcggctcc 240

tatttcgtct atgatgactg tgcagcgatg gtcgcgt 277

<210> 501
<211> 132
<212> nucleic acid
<213> Zea mays

<400> 501

cgagacgcgt gggagagcag gtcaatggtg ctatggctag ttgccaagct ttgaagttgg 60

atgctctggt tatcactgga ggtgtcactt ccaacactga tgctgctcaa cttgccgaga 120

catttgctga gg 132

<210> 502
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 502

cattgtgaag cctgggtgct ctcaggatgt ccttaaggcg gcgctgagcg ccatgtcttc 60

tgtgacggag acactgaaca tcatgacctc atcgtccacc ggccagactg cactgtgact 120

cgtttggtgc cgttttgtgg tgcggatcag aatccccact ttttccatgg tgtcgattga 180

caaagttagg agcagtaatc ctgtggtgcc gatcagaatc cccacttttt ccatggtgcc 240

acacgggtca ttcttttgta gcttcttggg agagttctat cagttttgaa 290

<210> 503
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 503

cattgtgaag cctgggtgct ctcaggatgt ccttaaggcg gcgctgagcg ccatgtcttc 60

tgtgacggag acactgaaca tcatgacctc atcgtccacc ggccagactg cactgtgact 120

cgtttggtgc cgttttgtgg tgcggatcag atccccactt tttccatggt gtcgattgac 180

aaagttagga gcagtaatcc tgtggtgcgg atcagaatcc ccactttttc catggtgcca 240

cacgggtcat tcttttgtag cttctcggga gagttctatc agttttgaat 290

<210> 504
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 504

gcgccacccg cacccaccaa cgaggcaacg aaacccagtc ggaagctaga ccggcgacaa 60

gtgcagcgct cgccgcgatg gatactgact acggcgtgcc gcgcgagctg tcggaggtgc 120

agaagaagcg cgcgctctac cagcccgagg tgcccccctg catccagggg actactgtca 180

gggtggagta tggtgacgcc gcaattgcag ctgaccaggc aggcgctcat gtgatcagcc 240

atgcgttccc tcacacctat gggcagcccc ttgca 275

<210> 505
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 505

cagctttctc agattgaaga ccagaagaac tttctacccc agttagttga gactgaaatg 60

gacagacttt tgaaggaggg cacttacaaa ggaaagaagt ttaatgcaat ctgtcacttc 120

tttggctacc aagctagggg agcactgcct tccaagtttg actgcgatta tgcctatgtc 180

ttggggcatg tgtgctacca catcatagct gccggtttga acggttacat ggccacagtg 240

acaaatgtta agagt 255

<210> 506
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 506

ctttttgttg gaagatgtct acaggaaccc aagcccggtt cagtttgaag ggccaagtgc 60

ccattcaaag cctatgtgag ttgtccttga aggttcagaa ctttttggcc ggattaaaaa 120

agttcaggat tccttggaaa aggtgaaaag gattgtgaac cctgggtgct cgcaggatgt 180

tcttaaagcg gcgctgagtg ccatgtcttc tgtgacggaa acactgaaca tcatgacttc 240

atcttctacc ggccagactc cactgagtca ttaggtacca tttcatggta tggatcataa 300

tccccacttt tttcagtggt ggcgattaac gagtttagga acagcaaccc tggtatcata 360

cgggttattc tttttgtagc cttttggaga gttctatcgg ttttggattc ggtagtttat 420

g 421

<210> 507
<211> 363
<212> nucleic acid
<213> Zea mays

<400> 507

gcattgtgaa gcccgggtgc tcgcaggatg tccttaaagc agcggtaagc gccatggctt 60

ctgtgacgga gatgttgacc atcatgtctt ccctttcatt tagtggacag gcgaccatct 120

gaaggccaag ctgaagatgt catatgctgt tgcgctgtca tgtcccgaac atatttgtgt 180

tttttttggga aagaaacata caattttttg ttctcattct agtatcgtct acctatgtca 240

aactacaata tgataggacc cttgcgaaat aattgtttcg tttgctggta tttctcatct 300

ttgatgctaa aaaaaaagga catattgtgt aagaaagttc aagggtgcac atcacaccaa 360

tat 363

<210> 508
<211> 171
<212> nucleic acid
<213> Zea mays

<400> 508

cccacgcgtc cgcgcatgtg gaacctctcc tctggttggg ggcaattcat ggcggtcacg 60

acgagagctt acagatccga atgggcccgt gtactacaac ggcatgtacc acctgttcta 120

ccagtacaac ccgcacgggg cgctctggga cgtgggcaac ctctcatggg g 171

<210> 509
<211> 142
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (4)...(5),(9),(36),(79),(87),(122),(126),(139)
<223> unsure at all n locations

<400> 509

gtgnnccanc cggtcggacg agggctgaac ccaggnccag ttcagagacc cgacgaccgg 60

ctggatcggc ccggacggnt tgtggangat agccgtcggg gccgaggtcg acggccacag 120

cncggngctt ctgtacgana gc 142

<210> 510
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 510

gctcctccat ggccatggcc atggcccgac cttgtgcttt ccttctcttc ttcctagttc 60

ttttctccta cgacggatcc ggtcctgcga gcagcaggag gactaggagg agtggcgtcg 120

cgcaggccac gcagagagtc ttcctgtatc cacaggctcc caaggtctcc tccatcgtga 180

gcagcaagta caggaccgcg taccacttcc agcctcccaa gaactggatc aacgatccaa 240

atggaccaat gtactacaat ggtatctacc accagttcta ccagtaca 288

<210> 511
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 511

aaagaatcaa gctgcagggt ctgaacgtga caccaaagat tcttgtgctg actaggctga 60

taccagatgc caagggtaca aaatgcaatg tggagctcga gccagttgaa aatacaaaac 120

attcccacat acttcgtgtg ccattcaaga ctgaaaacgg caaggagttg cgccagtggg 180

tgtcccggtt tgacatctac ccttacctag agagatatgc ccaggattct tgtgccaaaa 240

t 241

<210> 512
<211> 185
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (36),(52),(66),(80),(82),(90)
<223> unsure at all n locations

<400> 512

ctcgtgacca aagggtaatc tgaaccatcg agccantgcc gccaagcaga cncgtctcca 60

cagtcngcgc gtacgtcttn gngccacctn ctcctctcat cccaatgaac tgatagcact 120

ctagtccagg tatgtccacc atggcaattg aatgcgtcag cgccatcagc tgctttcgga 180

gtatg 185

<210> 513
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 513

ggaagagatc gcggagatag agaagatgca tgaactcatc aagacccaca acttgttcgg 60

gcagttccgc tggatctctg cccagacaaa cagggcccgt aacggcgagc tctatcgcta 120

catcgctgat acccatggtg ctttcgtaca gccggccttc tatgaagcgt tcggtctcac 180

cgtcgttgaa gccatgacct gtggacttcc tactttcgcg acgctccatg gagggccagc 240

tgagatcata gagcatggcg tctcgggctt ccacattgac ccgta 285

<210> 514
<211> 112
<212> nucleic acid
<213> Zea mays

<400> 514

gtccatttga tttgcgttca ctgcgttgcg tttccttgga ggggattgtt ctctcctctc 60

catgggattg gaggtccctc cttcttctcc tctctctctc agatgaacgc ct 112

<210> 515
<211> 135
<212> nucleic acid
<213> Zea mays

<400> 515

gctccagggg agacaatgtt gaacttggga tcgaaaaccg acaagagact cactgctcat 60

ccagatcgag agtcatctaa ggacgtcaga ctcgcacact cggctagaca gaaagcgtca 120

ctccgagggg ccacg 135

<210> 516
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 516

ataagaaatg gatatcaaga tttgatgtgt ggccatatct ggaaacattt gctgaggatg 60

ctgctggtga aattgctgct gaattacaag gtactccaga cttcataatt ggaaactaca 120

gtgatggaaa tcttgtggca tcgttgctat cttacaagat gggaattacc cagtgcaaca 180

ttgctcatgc tctggaaaag actaagtatc cagattcaga catattttgg aagaatttcg 240

atgagaagta ccatttctcc ttcagttcac ggctgatata attgctatga acaatgc 297

<210> 517
<211> 202
<212> nucleic acid
<213> Zea mays

<400> 517

tagcactcgt ttccaggtat gttcaccagg gcaagggaat gcttcatcgc catcagctgc 60

ttgcggagtt tgatgccctg tttggatagt gacaaggaga agtatgcacc ctttgaagac 120

attcttcgtg ctgctcagga agcaattgtg ctccccccat gggttgcact tgctatgggg 180

ccaagtccgg ttgtctggga tt 202

<210> 518
<211> 346
<212> nucleic acid
<213> Zea mays

<400> 518

tcgtatccca catggataca ttggacaagg taatgtatta ggcttgccag acacacagag 60

gatagatcgt ctatatactg gaccaagttc gtgcactagt aaatgggatc gctctacgtt 120

tacagccaca agggcttgat gtttccccaa agattcacat tgctagtcgg ctgatcatag 180

atggagtagg tagatcatgc aatcagcggg ttgagagagt tagtggcaca cagcatactt 240

acatattacg agttcacttc tgagatgaaa atgggatact tatgaagtgg atatcaagat 300

tatgatgaga ggcgatatct ggagacattt gctgaggatg ctgctg 346

<210> 519
<211> 62
<212> nucleic acid
<213> Zea mays

<400> 519

ccgttctacg acacgttcgg cctgctgtgt cgagtcatac gtcggctgca agatcggctg 60

ca 62

<210> 520
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 520

ggacaccgtg gggcagtacg agtcccacat cgcgttcact cttcctgggc tctaccgtgt 60

ccttgcttcc cgcgatttct tggaatgtgc tggtgatgat gaaatcggtg tggttcatgg 120

caataaggtc agctgtgaac tggcaagaga agtggtactg gctgtacgag tcccacatcg 180

cgttcactct tcctgggctc taccgtgtcg tccatggcat cgatgttttc gatcccaagt 240

tcaacattgt 250

<210> 521
<211> 142
<212> nucleic acid
<213> Zea mays

<400> 521

catttccgat ggacttcgac atggagtgca attccttgtc ctggaacaac ttggacgagg 60

agagtttgta ccccttgctg aacttcctca aggctcataa ctacaagggc acgacgatga 120

tgttgaatga cagaatccaa ag 142

<210> 522
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 522

actttcgcga cgctccatgg agggccagct gagatcatag agcatggcgt ctcgggcttc 60

cacattgacc cgtaccaccc cgagcaggct gctaatctga tggccgactt cttcgagcgg 120

tgcaagcaag acccagatca ctgggtgaaa atatctggag cagggctgca gcgcatatac 180

gagaagtaca catggaagat ctactcagag aggttgatga cactggccgg ggtctacggt 240

ttctggaagt acgtgtcgaa gctc 264

<210> 523
<211> 310
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (87)
<223>

<400> 523

cagtgatgga aatcttgtgg catcgttgct atcttacaag atgggaatta cccagtgcaa 60

cattgctcat gctctggaaa agactanata tccagattca gacatatttt ggaagaactt 120

cgatgagaag taccatttct cctgtcagtt cactgctgat ataattgcta tgaacaatgc 180

tgattttatc atcaccagca cataccaaga aattgctgga agcaaaaata ctgttggaca 240

gtatgagagt catactgctt ttactctgcc tggtctgtac cgagttgtcc atgggatcga 300

tgtcttcgat 310

<210> 524
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 524

atgaacaatg ctgattttat catcaccagc acataccaag aaattgctgg aagcaaaaat 60

actgttggac agtatgagag tcatactgct tttactctgc ctggtctgta ccgagttgtc 120

catgggatcg atgtcttcga tccaaagttc aatatagtct ctcctggagc tgacatgtcc 180

a 181

<210> 525
<211> 148
<212> nucleic acid
<213> Zea mays

<400> 525

cacataccaa gaaattgctg gaagcaaaaa tactgttgga cagtatgaga gtcatactgc 60

ctttactctg cctggtctgt accgagttgt ccatgggatt gatgtcttcg atccaaagtt 120

caatatagtc tctcctggag ctgacatg 148

<210> 526
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 526

ctcgagcccc aaagttcaat atagtctctc ctggagctga catgtccata tactttccac 60

ataccgagaa ggccaagcga ctcacctctc ttcatggttc aatcgaaaat ttgatttatg 120

acccggagca aaacgatgaa cacattgggc atctggatga ccggtcaaag cccatcctct 180

tctccatggc aagactcgac agggtgaaga acataacggg gctggtcgaa gcttttgcca 240

agtgcgctaa gctgagggag ctggtaaacc ttgtcgtcgt tgc 283

<210> 527
<211> 150
<212> nucleic acid
<213> Zea mays

<400> 527

accgagttgt ccatgggatc gatgtcttcg atccaaagtt caatatagtc tctcctggag 60

ctgacatgtc catatacttt ccacataccg agaaggccaa gcgactcacc tctcttcatg 120

gttcaatcga aaatttgatt tatgacccgg 150

<210> 528
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 528

gttcctcaac cgacacttgt cctcaatcat gttccgcaac agggattgct tggacgccct 60

gctggatttc ctccgtggcc accggcacaa ggggcatgtt atgatgctta tgatagaata 120

caaagcttgg ggaggcttca gtctgtgctg accaaagctg aggagcactt gtcaaagctc 180

cctgctgaca caccatactc acaatttgct tataaatttc aagagtgggg cctggagaaa 240

ggtggggtga tacag 255

<210> 529
<211> 137
<212> nucleic acid
<213> Zea mays

<400> 529

ccgcaacacg gattgcttgg agcccctgtt ggatttcctc cgtggccacc ggcacaaggg 60

gcatgttatg atgcttaatg atagaataca aaacttgggg aggcttcagt ctgtgctgac 120

caaagctgag gagcact 137

<210> 530
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 530

cggacgcgtg ggcaaggatg gtgcttttga ggatgtcctg agggcagctc aggaggcgat 60

tgtcatcccc cacatgggtt gcacttgcca tccgccctag gcctggtgtc tgggagtatg 120

tgagggtcaa cgtcagtgag ctcgctgttg aggagctgag agttcctgag tacctgcagt 180

tcaaggaaca gcttgtggaa gaaggcccca acaacaactt tgttcttgag ctggactttg 240

agccattcaa tgcctccttc ccccgtcctt ctctgtcaaa gtccattggc aat 293

<210> 531
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 531

gatggtgctt ttgaggatgt cctgagggca gctcaggagg cgattgtcat ccccccatgg 60

gttgcacttg ccatccgccc taggcctggt gtccgggagt atgtgaaggt caacgtcagt 120

gggctcgctg ttgaggagct gagagttcct gagtacctgc agttcaagga acagcttgtg 180

gaagaaggcc ccaacaacaa ctttgttctt gagctggact ttgagccatt caatgcctcc 240

ttcccccgtc cttctctgtc aaagtccatt ggcaatggcg tgcagttcct caacaggcac 300

ctgtcatc 308

<210> 532
<211> 170
<212> nucleic acid
<213> Zea mays

<400> 532

ggctttttgg aggccgaggc cattggtgcc atgcggccag ccctttctt ctccatggtt 60

cccatcgatg tgtttttgtt cggttctctc gtcagatctg tataaatagg cgcctccctt 120

ctccgccatt cctcggtcct ctgaagcgtt tcagttcatc gattcagttc 170

<210> 533
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 533

gctggtcgaa gcttttgcta agtgcgctaa gctgagggag ctggtaaacc ttgtcgtcgt 60

tgccgggtac aatgatgtca acaagtccaa ggacagggaa gagatcgcgg agatagagaa 120

gatgcatgaa ctcatcaaga cccacaactt gttcgggcag ttccgctgga tctctgccca 180

gacaaacagg gcccgtaacg gcgagctcta tcgctacatc gctgataccc atggtgcttt 240

cgtacagccg gccttctatg aagcgttcgg tctcaccgtc gttgaggcca tgacctgtgg 300

act 303

<210> 534
<211> 365
<212> nucleic acid
<213> Zea mays

<400> 534

caccgagtcg cacaagaggc tgacctccct tcacccggag attgaggagc tcctgtacag 60

ccaaaccgag aacacggagc acaagttcgt tctgaacgac aggaacaagc caatcatctt 120

ctccatggct cgtctcgacc gtgtgaagaa cttgactggg ctggtggagc tgtacggccg 180

gaacaagcgg ctgcaggagc tggtgaacct cgtggtcgtc tgcggcgacc atggcaaccc 240

ttccaaggac aaggaggagc aggccgagtt caagaagatg tttgacctca tcgagcagta 300

caacctgaac gggcacatcc gctggatctc cgcccagatg aaccgcgtcc gcaacggcga 360

gctgt 365

<210> 535
<211> 330
<212> nucleic acid
<213> Zea mays

<400> 535

ataccttgtt gcgtgtttgc tcgcccacaa gatgggtgtt actcactgta ccattgccca 60

tgcgcttgag aaaactaagt accctaactc cgacctctac tggaagaagt ttgaggatca 120

ctaccacttc tcgtgccagt tcaccactga cttgattgca atgaaccatg ccgacttcat 180

catcaccagt accttccaag agatcgccgg aaacaaggac accgtcggcc agtacgagtc 240

acacatggcg ttcacaatgc ctggcctgta ccgcgttgtc cacggcattg atgtgttcga 300

ctccaagttc aacatcgtgt ctcctggcgc 330

<210> 536
<211> 332
<212> nucleic acid
<213> Zea mays

<400> 536

gaagatcctc attgttacca ggctgttgcc tgatgctgct gggactacgt gcggtcagcg 60

gctggagaag gtcattggta ctgagcacac agacatcatt cgcgttccct tcagaaatga 120

gaatggcatc ctccgcaagt ggatctctcg ttttgatgtc tggccatacc tggagacata 180

cactgaggat gtttccagtg aaataatgaa agaaatgcag gccaagcctg accttatcat 240

tggcaactac agcgatggca acctagtcgc cactctgctc gcgcacaagt tgggagtcac 300

tcagtgtacc atcgctcatg ccttggagaa aa 332

<210> 537
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 537

tgcagcctgc tttctacgag gctttcgggc tgacggtggt tgaggccatg acctgcggcc 60

tgcccacgtt cgccaccgcc tacggcgtcc ggccgagatc atcgtgcacg gcgtgtctgg 120

ctaccacatc gacccttacc agggcgacaa ggcgtcggcc ctgctcgtgg acttcttcga 180

caagtgccag gcggagcgat gccactggag caagatctcc cagggcgggc tccagcgtat 240

cgaggagaag tacacctgga agctgtactc ggagaggctg atgaccctca ccggcgtgta 300

cgggttctgg aagtacgtgt ccaacctgga gaggcgcgag 340

<210> 538
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 538

aggcactcct gtacagccaa accgagaaca cggagcacaa gttcgttctg aacgacagga 60

acaagccaat catcttctcc atggctcgtc tcgaccgtgt gaagaacttg actgggctgg 120

tggagctgta cggccggaac aagcggctgc aggagctggt gaacctcgtg gtcgtctgcg 180

gcgaccatgg caacccttcc aaggacaagg aggagcaggc cgagttcaag aagatgtttg 240

acctcatcga gcagtacaac ctgaacgggc acatccgctg gatctccgcc cagatgaacc 300

gcgtccgcaa cggcgagctg ta 322

<210> 539
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 539

cggaccgtgg ccttcgcgtg ccattcagaa cagaaaacgg aatcgttcgc aagtggatgt 60

cgcgatttga agtctggccg tacctggaga cttacactga tgacgtggcg catgagattg 120

ctggagagct tcaggccaat cctgacctga tcatcggaaa ctacagtgac ggaaaccttg 180

ttgcgtgttt gctcgcccac aagatgggtg ttactcactg taccattgcc catgcgcttg 240

agaaaactaa gtaccctaac tccgacctct actggaagaa gtttgaggat cactaccact 300

tctcgtgcca gttcaccact gacttgattg caatgaa 337

<210> 540
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 540

gctaatgtct tgggttaccc tgacaccgga ggccaggttg tctacatctt ggatcaagtg 60

cgcgctatgg agaacgaaat gctgctgagg atcaagcagt gtggtcttga catcacgccg 120

aagatcctta ttgtcaccag gttgctccct gatgcaactg gcaccacctg tggccagcgc 180

cttgagaagg tccttggcac cgagcactgc catatccttc gcgtgccatt cagaacagaa 240

aacggaatcg ttcgcaagtg gatctcgcga tttgaagtct ggccgtacct ggagacttac 300

actgatgacg tggcgcatga 320

<210> 541
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 541

cgacagaatc cgcagtctca gtgctctgca aggtgcgctg aggaaggctg aggagcacct 60

gtccacccta caagctgata ccccatactc tgaatttcac cacaggttcc aggaacttgg 120

tctggagaag ggttggggtg attgcgctaa gcgtgcacag gagactatcc acctcctctt 180

ggacctcctg gaggccccag atccgtccac cctggagaag ttccttggaa cgatccccat 240

ggtgttcaat gtcgttatcc tctcccctca tggttacttc gctcaagcta atgtcttggg 300

ttaccctgac accgg 315

<210> 542
<211> 327
<212> nucleic acid
<213> Zea mays

<400> 542

gcgcattcgt gcagcctgcg ttctacgaag cgttcggcct gactgtgatc gagtccatga 60

cgtgcggtct gccaacgatc gcgacctgcc atggtggccc tgctgagatc atcgtggacg 120

gggtatctgg cctgcacatt gacccttacc acagcgacaa ggccgcggat atcctggtca 180

acttctttga caaatgcaag gcagatccga gctactggga caagatctca cagggcggcc 240

tgcagagaat ctatgagaag tacacctgga agctctactc cgagaggctg atgaccctga 300

ccggcgtgta cgggttctgg aagtacg 327

<210> 543
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 543

gaatcgttcg caagtggatc tcgcgatttg aagtctggcc gtacctggag acttacactg 60

atgacgtggc gcatgagatt gctggagagc ttcaggccaa tcctgacctg atcattggaa 120

actacagtga cggaaacctt gttgcgtgtt tgctcgccca caagatgggt gttactcact 180

gtaccattgc ccatgcgctt gagaaaacta agtaccctaa ctccgacctc tactggaaga 240

agtttgagga tcactaccac ttctcgtgcc agttcaccac tgacttgatt gcaatgaacc 300

atgccgactt catcatca 318

<210> 544
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 544

cttcatcatc accagtacct tccaagagat cgccggaaac aacgacaccg tcggccagta 60

cgagtcacac atggcgttca caatgcctgg cctgtaccgc gttgtccacg gcattgatgt 120

gttcgacccc aagttcaaca tcgtgtctcc tggcgcggac ctgtccatct acttcccgta 180

caccgagtcg cacaagaggc tgacctccct tcacccggag attgaggagc tcctgtatag 240

cccaaccgag aacacggagc acaagttcgt tctgaacgac aggaacaagc caatcatctt 300

ctccatggct cgtctcg 317

<210> 545
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 545

gctgacctta ttgccatgaa ccacaccgat ttcatcatca ccagcacatt ccaagaaatc 60

gcgggaagca aggacaccgt ggggcagtac gagtcccaca ttgcgttcac tcttcctggg 120

ctctaccgtg tcgtccatgg catcgatgtt ttcgatccca agttcaacat tgtctcccct 180

ggagcagaca tgagtgttta ctacccgtat acggaaaccg acaagagact cactgccttc 240

catcctgaaa tcgaggagct catctacagc gacgtcgaga actccgagca caagttcgtg 300

ctgaaggaca agaagaagcc ga 322

<210> 546
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 546

ctcccctcat ggttacttcg ctcaagctaa tgtcttgggt taccctgaca ccggaggcca 60

ggttgtctac atcttggatc aagtgcgcgc tatggagaac gaaatgctgc tgaggatcaa 120

gcagtgtggt cttgacatca cgccgaagat ccttattgtc accaggttgc tccctgatgc 180

aactggcacc acctgtggcc agcgccttga gaaggtcctt ggcaccgagc actgccatat 240

ccttcgcgtg ccattcagaa cagaaaacgg aatcgttcgc aagtggatct cgcgatttga 300

agtctggccg tacctgga 318

<210> 547
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 547

accgagtcgc acaagaggct gacctccctt cacccggaga ttgaggagct cctgtacagc 60

caaaccgaga acacggagca caagttcgtt ctgaacgaca ggaacaagcc aatcatcttc 120

tccatggctc gtctcgaccg tgtgaagaac ttgactgggc tggtggagct gtacggccgg 180

aacaagcggc tgcaggagct ggtgaacctc gtggtcgtct gcggcgacca tggcaaccct 240

tccaaggaca aggaggagca ggccgagttc aagaagatgt ttgacctcat cgagcagtac 300

aacctgaacg ggcacatc 318

<210> 548
<211> 326
<212> nucleic acid
<213> Zea mays

<400> 548

ggagaagttc cttggaacta taccaatgat gttcaatgtt gttatccttt ctcctcatgg 60

ctacttcgct cagtccaatg tgcttggata ccctgacact ggcggtcagg ttgtgtacat 120

tctggatcaa gtccgtgctt tggagaatga gatgcttctg aggattaagc agcaaggcct 180

tgatatcact ccgaagatcc tcattgttac caggctgttg cctgatgctg ctgggactac 240

gtgcggtcag cggctggaga aggtcattgg tactgagcac acagacatca ttcgcgttcc 300

gttcagaaat gagaatggca tcctcc 326

<210> 549
<211> 320

<212> nucleic acid
<213> Zea mays

<400> 549

accgcgttgt ccacggcatt gatgtgttcg accccaagtt caacatcgtg tctcctggcg 60
catctacttc ccgtacaccg agtcgcacaa gaggctgacc tcccttcacc 120

cggagattga ggagctcctg tacagccaaa ccgagaacac ggagcacaag ttcgttctga 180

acgacaggaa caagccaatc atcttctcca tggctcgtct cgaccgtgtg aagaacttga 240

ctgggctggt ggagctgtac ggccggaaca agcggctgca ggagctggtg aacctcgtgg 300

tcgtctgcgg cgaccatggc 320

<210> 550
<211> 330
<212> nucleic acid
<213> Zea mays

<400> 550

tctggccata cctggagaca tacactgagg atgtttccag tgaaataatg aaagaaatgc 60

aggccaagcc tgaccttatc attggcaact acagcgatgg caacctagtc gctactctgc 120

tcgcgcacaa gttgggagtc actcagtgta ccatcgctca tgccttggag aaaaccaaat 180

accccaactc ggacatatac ttggacaaat tcgacagcca gtaccacttc tcttgccagt 240

tcacagctga ccttattgcc atgaaccaca ctgatttcat catcaccagc acattccaag 300

aaatcgcggg aagcaaggac accgtggggc 330

<210> 551
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 551

ctacagcgac gtcgagaact ccgagcacaa gttcgtgctg aaggacaaga agaagccgat 60

catcttctcg atggcgcgtc tcgaccgcgt gaagaacatg acaggcctgg tcgagatgta 120

cggcaagaac gcgcgcctga gggagctggc gaacctcgtg atcgttgccg gtgaccacgg 180

caaggagtcc aaggacaggg aggagcaggc ggagttcaag aagatgtaca gcctcatcga 240

cgagtacaag ttgaagggcc atatccggtg gatctcggcg cagatgaacc gcgtccgcaa 300

cggggagctg taccgcta 318

<210> 552
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 552

aagtacccta actccgacct ctactggaag aagtttgagg atcactacca cttctcgtgc 60

cagttcacca ctgacttgat tgcaatgaac catgccgact tcatcatcac cagtaccttc 120

caagagatcg ccggaaacaa ggacaccgtc ggccagtacg agtcacacat ggcgttcaca 180

atgcctggcc tgtaccgcgt tgtccacggc attgatgtgt tcgaccccaa gttcaacatc 240

gtgtctcctg gcgcggacct gtccatctac ttcccgtaca ccgagtcgca caagaggctg 300

acctcccttc a 311

<210> 553
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 553

gttcctcaac aggcacctgt catcaaagct cttccatgac aaggagagca tgtacccctt 60

gctcaacttc cttcgcgccc acaactacaa ggggatgacc atgatgttga acgacagaat 120

ccgcagtctc agtgctctgc aaggtgcgct gaggaaggct gaggagcacc tgtccaccct 180

acaagctgat accccatact ctgaatttca ccacaggttc caggaacttg gtctggagaa 240

gggttggggt gattgcgcta agcgtgcaca ggagactatc cacctcctct tggacctcct 300

ggaggcccca gatccgtcca 320

<210> 554
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 554

gacaggaaca agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaacttgact 60

gggctggtgg agctgtacgg ccggaacaag cggctgcagg agctggtgaa cctcgtggtc 120

gtctgcggcg accatggcaa cccttccaag gacaaggagg agcaggccga gttcaagaag 180

atgtttgacc tcatcgagca gtacaacctg aacgggcaca tccgctggat ctccgcccag 240

atgaaccgcg tccgcaacgg cgagctgtac cgctacatct gcgacaccaa gggcgccttc 300

gtgcagcctg c 311

<210> 555
<211> 363
<212> nucleic acid
<213> Zea mays

<400> 555

tgtctggcta ccacatcgac gcttaccagg gcgacaaggc gtcggccctg ctcgtggact 60

tcttcgacaa gtgacaggcg gagcgagcca ctggagcaag atctcccagg gcgggctcca 120

gcgtatcgag gagaagtaca cctggaagct gtactcggag aggctgatga ccctcaccgg 180

cgtgtacggg ttctggaagt acgtgtccaa cctggagagg cgcgagaccc ggcggtacct 240

ggagatgctg tacgcgctca agtaccgcac catggcgagc accgtgccgc tggccgtgga 300

gggagagcct ccagcaagtg atgcgtgacg gcggccacag acctgatcga tcgatgagcg 360

aga 363

<210> 556
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 556

cagaaaacgg aatcgttcgc aagtggatct cgcgatttga agtctggccg tacctggaga 60

cttacactga tgacgtggcg catgagattg ctggagagct tcaggccaat cctgacctga 120

tcatcggaaa ctacagtgac ggaaaccttg ttgcgtgttt gctcgcccac aagatgggtg 180

ttactcactg taccattgcc catgcgcttg aggaaactaa gtaccctaac tccgacctct 240

actggaagaa gtttgaggat cactaccact tctcgtgcca gttcaccact gacttgattg 300

ccatgaacca tgccgac 317

<210> 557
<211> 310
<212> nucleic acid

<213> Zea mays

<400> 557

cccttcaccc ggagattgag gagctcctgt acagccaaac cgagaacacg gagcacaagt 60

tcgttctgaa cgacaggaac aagccaatca tcttctccat ggctcgtctc gaccgtgtga 120

agaacttgac tgggctggtg gagctgtacg gccggaacaa gcggctgcag gagctggtga 180

acctcgtggt cgtctgcggc gaccatggca acccttccaa ggacaaggag gagcaggccg 240

agttcaagaa gatgtttgac ctcatcgagc agtacaacct gaacgggcac atccgctgga 300

tctccgccca 310

<210> 558
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 558

cttggtctgg agaagggttg gggtgattgc gctaagcgtg cacaggagac tatccacctc 60

ctcttggacc tcctggaggc cccagatccg tccaccctgg agaagttcct tggaacgatc 120

cccatggtgt tcaatgtcgt tatcctctcc cctcatggtt acttcgctca agctaatgtc 180

ttgggttacc ctgacaccgg aggccaggtt gtctacatct tggatcaagt gcgcgctatg 240

gagaacgaaa tgctgctgag gatcaagcag tgtggtcttg acatcacgcc gaagatcctt 300

attgtcacca g 311

<210> 559
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 559

cttgggttac ctgacaccgg aggccaggtt gtctacatct tggatcaagt gcgcgctatg 60

gagaacgaaa tgctgctgaa ggatcaaagc agtgtgggtc ttaacatcac gccgaagatc 120

cttattgtca ccaggttgct ccctgatgca actggcacca cctgtggcca gcgccttgag 180

aaggtccttg gcaccgagca ctgccatatc cttcgcgtgc cattcagaac agaaaacgga 240

atcgttcgca agtggatctc gcgatttgac atctggccgt acctggagac ttacactgat 300

gacgtggcgc atgagat 317

<210> 560
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 560

cgagattgag gagctcctgt acagccaaac cgagaacacg gagcacaagt tcgttctgaa 60

cgacaggacc aagccaatca tcttctccat ggctcgtctc gaccgtgtga agaacttgac 120

tgggctggtg gagctgtacg gccggaacaa gcggctgcag gagctggtga acctcgtggt 180

cgtctgcggc gaccatggca acccttccaa ggacaaggag gagcaggccg agttcaagaa 240

gatgtttgac ctcatcgagc agtacaacct gaacgggcac atccgctgga tctccgccca 300

gatgaac 307

<210> 561
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 561

gtttgaggat cactaccact tctcgtgcca gttcaccact gacttgattg caatgaacca 60

tgccgacttc atcatcacca gtaccttcca agagatcgcc ggaaacaagg acaccgtcgg 120

ccagtacgag tcacacatgg cgttcacaat gcctggcctg taccgcgttg tccacggcat 180

tgatgtgttc gaccccaagt tcaacatcgt gtctcctggc gcggacctgt ccatctactt 240

cccgtacacc gagtcgcaca agaggctgac ctcccttcac ccggagattg aggagctcct 300

gtacagc 307

<210> 562
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 562

cggacatcta cttggacaag ttcgacagcc agtaccactt ctcttgccag ttcacagctg 60

accttattgc catgaaccac actgatttca tcatcaccag cacattccaa gaaatcgcgg 120

gaagcaagga caccgtgggg cagtacgagt cccacatcgc gttcactctt cctgggctct 180

accgtgtcgt ccatggcatc gatgttttcg atcccaagtt caacattgtc tcccctggag 240

cagacatgag tgtttactac ccgtatacgg aaaccgacaa gagactcact gccttccatc 300

ctgaaatcga ggag 314

<210> 563
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 563

gagatgcttc tgaggattaa gcagcaaggc cttgatatca ctccgaagat cctcattgtt 60

accaggctgt tgcctgatgc tgctgggact acgtgcggtc agcggctgga gaaggtcatt 120

ggtactgagc acacagacat cattcgcgtt ccgttcagaa atgagaatgg catcctccgc 180

aagtggatct ctcgttttga tgtctggcca tacctggaga catacactga ggatgtttcc 240

agtgaaataa tgaaagacat gcaggccaag cctgacctta tcattggcaa ctacagcgat 300

ggcaa 305

<210> 564
<211> 316
<212> nucleic acid
<213> Zea mays

<400> 564

gtggttgagg ccatgacctg cggcctgccc acgtttgcca cagcctacgg cggtccggcc 60

gagatcatcg tgcacggcgt gtctggctac cacatcgacc cttaccaggg cgacaaggcg 120

tcggccctgc tcgtggactt cttcgacaag tgccaggcgg acccgagcca ctggagcaag 180

atctcccagg gcgggctcca gcgtatcgag gagaagtaca cctggaagct ctactcggag 240

aggctgatga ccctcaccgg cgtgtacggg ttctggaagt acgtgtccaa cctggagagg 300

cgcgagaccc ggcggt 316

<210> 565
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 565

atgccgactt catcatcacc agtaccttcc aagagatcgc cggaaacaag gacaccgtcg 60

gccagtacga gtcacacatg gcgttcacaa tgcctggcct gtaccgcgtt gtccacggca 120

ttgatgtgtt cgaccccaag ttcaacatcg tgtctcctgg cgcggacctg tccatctact 180

tcccgtacac cgagtcgcac aagaggctga cctcccttca cccggagatt gaggagctcc 240

tgtacagcca aaccgagaac acggagccca agttcgttct gaacgacagg aacaagccaa 300

tcatct 306

<210> 566
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 566

gttcggcctg actgtgatcg agtccatgac gtgcggtctg ccaacgatcg cgacctgcca 60

tggtggccct gctgagatca tcgtggacgg ggtatctggc ctgcacattg acccttacca 120

cagcgacaag gccgcggata tcctggtcaa cttctttgac aaatgcaagg cagatccgag 180

ctactgggac aagatctcac agggcggcct gcagagaatt tatgagaagt acacctggaa 240

gctctactcc gagaggctga tgaccctgac cggcgtgtac gggttctgga agtacgtgag 300

caacctggag 310

<210> 567
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 567

cccacgcgtc cggcgatttg aagtctggcc gtacctggag acttacactg atgacgtggc 60

gcatgagatt gctggagagc ttcaggccaa tcctgacctg atcatcggaa actacagtga 120

cggaaacctt gttgcgtgtt tgctcgccca caagatgggt gttactcact gtaccattgc 180

ccatgcgctt gagaaaacta agtaccctaa ctccgacctc tactggaaga agtttgagga 240

tcactaccac ttctcgtgcc agttcaccac tgacttgatt gcaatgaacc atgccgactt 300

catcatcacc agtaccttcc 320

<210> 568
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 568

ggccgagttc aagaagatgt ttgacctcat cgagcagtac aacctgaacg ggcacatccg 60

ctggatctcc gcccagatga accgcgtccg caacggcgag ctgtaccgct acatctgcga 120

caccaagggc gccttcgtgc agcctgcttt ctacgaggct ttcgggctga cggtggttga 180

ggccatgacc tgcggcctgc ccacgttcgc caccgcctac ggcgtccggc cgagatcatc 240

gtgcacggcg tgtctggcta ccacatcgac ccttaccagg gcgacaaggc gtcggccctg 300

ctcgtggact t 311

<210> 569
<211> 313
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (32)
<223>

<400> 569

gtctgggagt atgtgagggt caacgtcatg angctcgctg ttgaggagct gagagttcct 60

gagtacctgc agttcaagga acagcttgtg gaagaaggcc ccaacaacaa ctttgttctt 120

gagctggact ttgagccatt caatgcctcc ttcccccgtc cttctctgtc aaagtccatt 180

ggcaatggcg tgcagttcct caacaggcac ctgtcatcaa agctcttcca tgacaaggag 240

agcatgtacc ccttgctcaa cttccttcgc gcccacaact acaaggggat gaccatgatg 300

ttgaacgaca gaa 313

<210> 570
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 570

accaagggcg ccttcgtgca gcctgctttc tacgaggctt tcgggctgac ggtggttgac 60

gccatgacct gcggcctgcc cacgttcgcc accgcctacg gcgtccggcc gagatcatcg 120

tgcacggcgt gtctggctac cacatcgacc cttaccaggg cgacaaggcg tcggccctgc 180

tcgtggactt cttcgacaag tgccaggcgg acgatgccac tggagcaaga tctcccaggg 240

cgggctccag cgtatcgagg agaagtacac ctggaagctg tactcggaga ggctgatgac 300

cctcaccgg 309

<210> 571
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 571

aacttggtct ggagaagggt tggggtgatt gcgctaagcg tgcacaggag actatccacc 60

tcctcttgga cctcctggag gccccagatc cgtccaccct ggagaagttc ctcggaacga 120

tccccatggt gttcaatgtc gttatcctct cccctcatgg ttacttcgct caagctaatg 180

tcttgggtta ccctgacacc ggaggccagg ttgtctacat cttggatcaa gtgcgcgcta 240

tggagaacga aatgctgctg aggatcaagc agtgtggtct tgacatcacg ccgaagatcc 300

ttatt 305

<210> 572
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 572

cactgaggat gtttccagtg aaataatgaa agaaatgcag gccaagcctg accttatcat 60

tggcaactac agcgatggca acctagtcgc cactctgctc gcgcacaagt tgggagtcac 120

tcagtgtacc atcgctcatg ccttggagaa aaccaaatac cccaactcgg acatatactt 180

ggacaaattc gacagccagt accacttctc ttgccagttc acagctgacc ttattgccat 240

gaaccacacc gatttcatca tcaccagcac attccaagaa atcgcgggaa gcaaggacac 300

cgtgg 305

<210> 573
<211> 306

<212>   nucleic acid
<213>   Zea mays

<400>   573

gacaccgtcg gccagtacga gtcacacatg gcgttcacaa tgcctggcct gtaccgcgtt   60

gtccacggca ttgatgtgtt cgaccccaag ttcaacatcg tgtctcctgg cgcggacctg 120

tccatctact tcccgtacac cgagtcgcac aagaggctga cctcccttca cccggagatt 180

gaggagctcc tgtacagcca aaccgagaac acggagcaca agttcgttct gaacgacagg 240

aacaagccaa tcatcttctc catggctcgt ctcgaccgtg tgaagaactt gactgggttg 300

gtggag   306

<210>   574
<211>   332
<212>   nucleic acid
<213>   Zea mays

<400>   574

ctcggagagg ctgatgaccc tcaccggcgt gtacgggttc tggaagtacg tgtccaacct   60

ggagacgcgc gagacccggc ggtacctgga gatgctgtac gcgctcaagt accgcaccat 120

ggcgagcacc gtgccgctgg ccgtggaggg agagccctcc agcaagtgat gcgtgacggc 180

ggccacagac ctgatcgatc gatgagcgag agggagcact cggagtgtcg tgtcttttcc 240

cttgccattt ctttctttct tctttttcct tcccggaggc gaaaaaaaaa gagtctgcat 300

ttgctaggcg gcgggcgttc gttgctgctc tt   332

<210>   575
<211>   309
<212>   nucleic acid
<213>   Zea mays

<400>   575

ggttacttcg ctcaagctaa tgtcttgggt taccctgaca ccggagccag gttgtctaca   60

tcttggatca agtgcgcgct atggagaacg aaatgctgct gaggatcaag cagtgtggtc 120

ttgacatcac gccgaagatc cttattgtca ccaggttgct ccctgatgca actggcacca 180

cctgtggcca gcgacttgag aaggtccttg gcaccgagca ctgccatatc cttcgcgtgc 240

cattcagaac agaaaacgga atcgttcgca agtggatctc gcgatttgaa gtctggccgt 300

acctggaga 309

<210> 576
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 576

cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag 60

cctgctttct acgaggcttt cgggctgacg gtggttgagg ccatgacctg cggcctgccc 120

acgtttgcca cagcctacgg cggtccggcc gagatcatcg tgcacggcgt gtctggctac 180

cacatcgacc cttaccaggg cgacaaggcg tcggccctgc tcgtggactt cttcgacaag 240

tgccaggcgg acccgagcca ctggagcaag atctcccagg gcgggctcca gcgtatcgag 300

gagaag 306

<210> 577
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 577

cggagcacaa gttcgttctg aacgacagga acaagccaat catcttctcc atggctcgtc 60

tcgaccgtgt gaagaacttg actgggctgg tggagctgta cggccggaac aagcggctgc 120

aggagctggt gaacctcgtg gtcgtctgcg gcgaccatgg caacccttcc aaggacaagg 180

aggagcaggc cgagttcaag aagatgtttg acctcatcga gcagtacaac ctgaacgggc 240

acatccgctg gatctccgcc cagatgaacc gcgtccgcaa cggcgagctg taccgctaca 300

<210> 578
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 578

ctcggttctg aacccagtgt cttgttgcgt gtttgctcgc ccacaagatg ggtgttactc 60

actgtaccat tgcccatgcg cttgagaaaa ctaagtaccc taactccgac ctctactgga 120

agaagtttga ggatcactac cacttctcgt gccagttcac cactgacttg attgcaatga 180

accatgccga cttcatcatc accagtacct tccaagagat cgccggaaac aaggacaccg 240

tcggccagta cgagtcacac atggcgttca caatgcctgg cctgtaccgc gttgtccacg 300

gcattgatgt gttcgacccc aa 322

<210> 579
<211> 336
<212> nucleic acid
<213> Zea mays

<400> 579

ccctgatgca actggcacca cctgtggcca gcgccttgag aaggtccttg gcaccgagca 60

ctgccatatc cttcgcgtgc cattcagaac agaacacgga atcgctcgcc agtggatctc 120

gcgatttgaa gtctggccgt acctggagac ttacactgat gacgtggcgc atgagattgc 180

tggagagctt caggccaatc ctgacctgat catcggaaac tacagtgacg gaaaccttgt 240

tgcgtgtttg ctcgcccaca agatgggtgt tactcactgt accattgccc atgcgcttag 300

aacactaagt acgctaactc cgacctctac tggaag 336

<210> 580
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 580

gagaatttat gagaagtaca cctggaagct ctactccgag aggctgatga ccctgaccgg 60

cgtgtacggg ttctggaagt acgtgagcaa cctggagagg cgcgagaccc gccgctacat 120

cgaaatgttc tacgccctga agtaccgtag cctggcaagc caggttccgc tgtccttcga 180

ttagtacggg gaaagaagaa gcccaggccg gagaaccatc gcctgcattt cgatctgttt 240

caccgcaatt cgcattgtta gtcgtgtatt ggagttatgt gtacttggtt tccaagaact 300

ttg 303

<210> 581
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 581

gaccttcttg aggcccctga tcctgccaac ttggagaagt tccttggaac tataccaatg 60

atgttcaatg ttgttatcct ttctcctcat ggctacttcg ctcagtccaa tgtgcttgga 120

taccctgaca ctggcggtca ggttgtgtac attctggatc aagtccgtgc tttggagaat 180

gagatgcttc tgaggattaa gcagcaaggc cttgatatca ctccgaagat cctcattgtt 240

accaggctgt tgcctgatgc tgctgggact acgtgcggtc agcggctgga gaaggtcatt 300

ggta 304

<210> 582
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 582

aagaaatcgc gggaagcaag gacaccgtgg ggcagtacga gtcccacatc gcgttcactc 60

ttcctgggct ctaccgtgtc gtccatggca tcgatgtttt cgatcccaag ttcaacattg 120

tctcccctgg agcagacatg agtgtttact acccgtatac ggaaaccgac aagagactca 180

ctgccttcca tcctgaaatc gaggagctca tctacagcga cgtcgagaac tccgagcaca 240

agttcgtgct gaaggacaag aagaagccga tcatcttctc gatggcgcgt ctcgaccgcg 300

tgaa 304

<210> 583
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 583

cgcgctatgg agaacgaaat gctgctgagg atcaagcagt gtggtcttga catcacgccg 60

aagatcctta ttgtcaccag gttgctccct gatgcaactg gcaccacctg tggccagcgc 120

cttgagaagg tccttggcac cgagcactgc catatccttc gcgtgccatt cagaacagaa 180

aacggaatcg ttcgcaagtg gatctcgcga tttgaagtct ggccgtacct ggagacttac 240

actgatgacg tggcgcatga gattgctgga gagcttcagg ccaatcctga cctgatcat 299

<210> 584
<211> 299

<212> nucleic acid
<213> Zea mays

<400> 584

gagaaaacta agtaccctaa ctccgacctc tactggaaga agtttgagga tcactaccac 60

ttctcgtgcc agttcaccac tgacttgatt gcaatgaacc atgccgactt catcatcacc 120

agtaccttcc aagagatcgc cggaaacaag gacaccgtcg gccagtacga gtcacacatg 180

gcgttcacaa tgcctggcct gtaccgcgtt gtccacggca ttgatgtgtt cgaccccaag 240

ttcaacatcg tgtctcctgg cgcggacctg tccatctact tcccgtacac cgagtcgca 299

<210> 585
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 585

ggcaccacct gtggccagcg ccttgagaag gtccttggca ccgagcactg ccatatcctt 60

cgcgtgccat tcagaacaga aaacggaatc gttcgcaagt ggatctcgcg atttgaagtc 120

tggccgtacc tggagactta cactgatgac gtggcgcatg agattgctgg agagcttcag 180

gccaatcctg acctgatcat cggaaactac agtgacggaa accttgttgc gtgtttgctc 240

gcccacaaga tgggtgttac tcactgtacc attgcccatg cgcttgagaa aactaa 296

<210> 586
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 586

acttgactgg gctggtggag ctgtacggcc ggaacaagcg gctgcaggag ctggtgaacc 60

tcgtggtcgt ctgcggcgac catggcaacc cttccaagga caaggaggag caggccgagt 120

tcaagaagat gtttgacctc atcgagcagt acaacctgaa cgggcacatc cgctggatct 180

ccgcccagat gaaccgcgtc cgcaacggcg agctgtaccg ctacatctgc gacaccaagg 240

gcgccttcgt gcagcctgct ttctacgagg ctttcgggct gacggtggtt gaggccatga 300

c 301

<210> 587
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 587

gctaatgtct tgggttaccc tgacaccgga ggccaggttg tctacatctt ggatcaagtg 60

cgcgctatgg agaacgaaat gctgctgagg atcaagcagt gtggtcttga catcacgccg 120

aagatcctta ttgtcaccag gttgctccct gatgcaactg gcaccacctg tggccagcgc 180

cttgagaagg tccttggcac cgagcactgc catatccttc gcgtgccatt cagaacagaa 240

aacggaatcg ttcgcaagtg gatctcgcga tttgaagtct ggccgtacct gga 293

<210> 588
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 588

catggctcgt ctcgaccgtg tgaagaactt gactgggctg gtggagctgt acggccggaa 60

caagcggctg caggagctgg tgaacctcgt ggtcgtctgc ggcgaccatg gcaacccttc 120

caaggacaag gaggagcagg ccgagttcaa gaagatgttt gacctcatcg agcagtacaa 180

cgtgaacggg cacatccgct ggatctccgc ccagatgaac cgcgtccgca acggcgagct 240

gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag cctgcttttct acgagg 296

<210> 589
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 589

cccacgcgtc cggagattgc tggagagcat caggccaatc ctgacctgat catcggaaac 60

tacagtgacg gaaaccttgt tgcgtgtttg ctcgcccaca agatgggtgt tactcactgt 120

accattgccc atgcgcttga gaaaactaag taccctaact ccgacctcta ctggaagaag 180

tttgaggatc actaccactt ctcgtgccag ttcaccactg acttgattgc aatgaaccat 240

gccgacttca tcatcaccag taccttccaa gagatcgccg gaaacaagga caccgtcggc 300

cagta 305

<210> 590
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 590

ctcctgtaca gccaaaccga gaacacggag cacaagttcg ttctgaacga caggaacaag 60

ccaatcatct tctccatggc tcgtctcgac cgtgtgaaga acttgactgg gctggtggag 120

ctgtacggcc ggaacaagcg gctgcaggag ctggtgaacc tcgtggtcgt ctgcggcgac 180

catggcaacc cttccaagga caaggaggag caggccgagt tcacgaagat gtttgacctc 240

atcgagcagt acaacctgaa cgggcacatc cgctggatct ccgcgcagat gaaccgc 297

<210> 591
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 591

gccaatcatc ttctccatgg ctcgtctcga ccgtgtgaag aacttgactg ggctggtgga 60

gctgtacggc cggaacaagc ggctgcagga gctggtgaac ctcgtggtcg tctgcggcga 120

ccatggcaac ccttccaagg acaaggagga gcaggccgag ttcaagaaga tgtttgacct 180

catcgagcag tacaacctga acgggcacat ccgctggatc tccgcccaga tgaaccgcgt 240

ccgcaacggc gagctgtacc gctacatctg cgacaccaag ggcgccttcg tgcagcctg 299

<210> 592
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 592

cttctcttgc cagttcacag ctgaccttat tgccatgaac cacaccgatt tcatcatcac 60

cagcacattc caagaaatcg cgggaagcaa ggacaccgtg gggcagtacg agtcccacat 120

cgcgttcact cttcctgggc tctaccgtgt cgtccatggc atcgatgttt tcgatcccaa 180

gttcaacatt gtctcccctg gagcagacat gagtgtttac tacccgtata cggaaaccga 240

caagagactc actgccttcc atcctgaaat cgaggagctc atctacagcg acgtcgaga 299

<210> 593
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 593

caatgcctgg cctgtaccgc gttgtccacg gcattgatgt gttcgacccc aagttcaaca 60

tcgtgtctcc tggcgcggac ctgtccatct acttcccgta caccgagtcg cacaagaggc 120

tgacctccct tcacccggag attgaggagc tcctgtacag ccaaaccgag aacacggagc 180

acaagttcgt tctgaacgac aggaacaagc caatcatctt ctccatggct cgtctcgacc 240

gtgtgaagaa cttgactggg ctggtggagc tgtacggccg gaacaagcgg ctgca 295

<210> 594
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 594

ctagtcgcca ctctgctcgc acacaagttg ggagtcactc agtgtaccat cgctcatgcc 60

ttggagaaaa ccaaataccc caactcggac atctacttgg acaagttcga cagccagtac 120

cacttctctt gccagttcac agctgacctt attgccatga accacactga tttcatcatc 180

accagcacat tccaagaaat cgcgggaagc aaggacaccg tggggcagta cgagtcccac 240

atcgcgttca ctcttcctgg gctctaccgt gtcgtccatg gcatcgatgt tttcgatccc 300

aa 302

<210> 595
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 595

ctcggtgcag atgaaccgcg tccgcaacgg ggagctgtac cgctacattt gcgataccaa 60

gggcgcattc gtgcagcctg cgttctacga agcgttcggc ctgactgtga tcgagtccat 120

gacgtgcggt ctgccaacga tcgcgacctg ccatggtggc cctgctgaga tcatcgtgga 180

cggggtatct ggcctgcaca ttgaccctta ccacagcgac aaggccgcgg atatcctggt 240

caacttcttt gacaaatgca aggcagatcc gagctactgg gacaagatct cacagggcgg 300

cctgcagaga attt 314

<210> 596
<211> 356
<212> nucleic acid
<213> Zea mays

<400> 596

ctaccgtgtc gtccatggca tcgatgtatt cgacacaagt tcaacattgt ctcccctgga 60

gcagacatga gtgattacta cccgtatacg gaaacccgac aagagactca ctgccttcca 120

tcctgaaatc gatgagctca tctacagcga cgtcgagaac tccgagcaca agttcgtgct 180

gaaggacaag aagaagccga tcatcttctc gatagcgcga ctcgaccgcg tgaagagaca 240

tgacaggcct ggtcgagatg tacggcaaga acgcgcgcct gagggagctg gcgaacctcg 300

tgatcgttgc cggtgaccac ggcaaggagt ccaaggacag ggaggagcag gcggag 356

<210> 597
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 597

gtggatctct cgttttgatg tctggccata cctggagaca tacactgagg atgtttccag 60

tgaaataatg aaagaaatgc aggccaagcc tgaccttatc attggcaact acagcgatgg 120

caacctagtc gccactctgc tcgcgcacaa gttgggagtc actcagtgta ccatcgctca 180

tgccttggag aaaaccaaat accccaactc ggacatatac ttggacaaat tcgacagcca 240

gtaccacttc tcttgccagt tcacagctga ccttattgcc atgaaccaca ccgatttcat 300

catcacc 307

<210> 598
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 598

cggacgcgtg ggtaccactt ctcgtgccag ttcaccactg acttgattgc aatgaaccat 60

gccgacttca tcatcaccag taccttccaa gagatcgccg gcaacaagga caccgtcggc 120

cagtacgagt cacacatggc gttcacaatg cctggcctgt accgcgttgt ccacggcatt 180

gatgtgttcg accccaagtt caacatcgtg tctcctggcg cggacctgtc catctacttc 240

ccgtacaccg agtcgcacaa gaggctgacc tcccttcacc cggagattga ggagctcctg 300

tacagccaaa ccgagaaca 319

<210> 599
<211> 303
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (243)
<223>

<400> 599

ggcgagctgt accgctacat ctgcgacacc aagggcgcct tcgtgcagcc tgctttctac 60

gaggctttcg ggctgacggt ggttgacgcc atgacctgcg gcctgcccac gttcgccacc 120

gcctacggcg gtccggccga gatcatcgtg cacggcgtgt ctggctacca catcgaccct 180

taccagggcg acaaggcgtc ggccctgctc gtggacttct tcgacaagtg ccaggcggag 240

cgnagccact ggagcaagat ctcccagggc gggctccagc gtatcgagga gaagtacacc 300

tgg 303

<210> 600
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 600

cccttcaccc ggagattgag gagctcctgt acagccaaac cgagaacacg gagcacaagt 60

tcgttctgaa cgacaggaac aagccaatca tcttctccat ggctcgtctc gaccgtgtga 120

agaacttgac tgggctggtg gagctgtacg gccggaacaa gcggctgcag gagctggtga 180

acctcgtggt cgtctgcggc gaccatggca acccttccaa ggacaaggag gagcaggccg 240

agttcaagaa gatgtttgac ctcatcgagc agtacaacct gaacgggcac a 291

<210> 601
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 601

ctcccctcat ggttacttcg ctcaagctaa tgtcttgggt taccctgaca ccggaggcca 60

ggttgtctac atcttggatc aagtgcgcgc tatggagaac gaaatgctgc tgaggatcaa 120

gcagtgtggt cttgacatca cgccgaagat ccttattgtc accaggttgc tccctgatgc 180

aactggcacc acctgtggcc agcgccttga gaaggtcctt ggcaccgagc actgccatat 240

ccttcgcgtg ccattcagaa cagaaaacgg aatcgttcgc aagtggatct cgcgatttga 300

agtctggcc 309

<210> 602
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 602

cccttaccac agcgacaagg ccgcggatat cctggtcaac ttctttgaca aatgcaaggc 60

agatccgagc tactgggaca agatctcaca gggcggcctg cagagaattt atgagaagta 120

cacctggaag ctctactccg agaggctgat gaccctgacc ggcgtgtacg ggttctggaa 180

gtacgtgagc aacctggaga ggcgcgagac ccgccgctac atcgagatgt tctacgccct 240

gaagtaccgt agcctggcaa gccaggttcc gctgtccttc gattagtacg gggaaagaag 300

aagaagaaga agcccaggcc gga 323

<210> 603
<211> 333
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (60)
<223>

<400> 603

gagtcgcaca agaggctgac ctcccttcac ccggagattg aggagctcct gtacagccan 60

accgagaaca cggagcacaa gttcgttctg aacgacagga acaagccaat catcttctcc 120

atggctcgtc tcgaccgtgt gaagaacttg actgggctgg tggagctgta cggccggaac 180

aagcggctgc aggagctggt gaacctcgtg gtcgtctgcg tgcgacatgg caacccttcc 240

aaggacaagg aggagcaggc cgagttcaag aagatgtttg acctcatcga gcagtacaac 300

ctgaacgggc acatccgctg gatctccgcc cag 333

<210> 604
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 604

cggaccgtgg ctggcgcgga cctgtccatc tacttcccgt acaccgagtc gcacaagagg 60

ctgacctccc ttcacccgga gattgaggag ctcctgtaca gccaaaccga gaacacggag 120

cacaagttcg ttctgaacga caggaacaag ccaatcatct tctccatggc tcgtctcgac 180

cgtgtgaaga acttgactgg gctggtggag ctgtacggcc ggaacaagcg gctgcaggag 240

ctggtgaacc tcgtggtcgt ctgcggcgac catggcaacc cttccaagga caaggaggag 300

caggccgagt tcaagaagat gt 322

<210> 605
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 605

aaacttggtc tggagaaggg ttggggtgat tgcgctaagc gtgcacagga gactatccac 60

ctcctcttgg acctcctgga ggccccagat ccgtccaccc tggagaagtt ccttggaacg 120

atccccatgg tgttcaatgt cgttatcctc tcccctcatg gttacttcgc tcaagctaat 180

gtcttgggtt accctgacac cggaggccag gttgtctaca tcttggatca agtgcgcgct 240

atggagaacg aaatgctgct gaggatcaag cagtgtggtc ttgacatcac 290

<210> 606
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 606

ggacctgggc cgagttcaag aagatgtttg acctcatcga gcagtacaac ctgaacgggc 60

acatccgctg gatctccgcc cactatgaac cgcgtccgca acggcgagct gtaccgctac 120

atctgcgaca ccaagggcgc cttcgtgcag cctgctttct acgaggcttt cgggctgacg 180

gtggttgagg ccatgacctg cggcctgccc acgtttgcca cagcctacgg cggtccggcc 240

gagatcatcg tgcacggcgt gtctggctac cacatcgacc cttaccaggg cgacaaggcg 300

tcggcc 306

<210> 607
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 607

aaactaagta ctctaactcc gacctctact ggaagaagtt tgaggatcac taccacttct 60

cgtgccaagt caccactgac ttgattgcaa tgaaccatgc cgacttcatc atcaccagta 120

ccttccaaga gatcgccgga aacaaggaca ccgtcggcca gtacgagtca cacatggcgt 180

tcacaatgcc tggcctgtac cgcgttgtcc acggcattga tgtgttcgac cccaagttca 240

acatcgtgtc tcctggcgcg gacctgtcca tctacttccc gtacaccgag tcg 293

<210> 608
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 608

ccttggcacc gagcactgcc atatccttcg cgtgccattc agaacagaaa acggaatcgt 60

tcgcaagtgg atctcgcgat ttgaagtctg gccgtacctg gagacttaca ctgatgacgt 120

ggcgcatgag atagctggag agcttcaggc caatcctgac ctgatcatcg gaaactacag 180

tgacggaaac cttgttgcgt gtttgctcgc ccacaagatg ggtgttactc actgtaccat 240

tgcccatgcg cttgagaaaa ctaagtaccc taactccgac ctctactgga agaagtctga 300

ggatcactac cact 314

<210> 609
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 609

cccacgcgtc cgggcacatc cgctggatct ccgcccagat gaaccgcgtc cgcaacggcg 60

agctgtaccg ctacatctgc gacaccaagg gcgccttcgt gcagcctgct ttctacgagg 120

ctttcgggct gacggtggtt gaggccatga cctgcggcct gcccacgttc gccaccgcct 180

acggcggtcc ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc 240

agggcgacaa ggcgtcggcc ctgctcgtgg acttcttcga caagtgccag gcggagcgag 300

ccactggagc aag 313

<210> 610
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 610

gttcaacatc gtgtctcctg gcgcggacct gtccatctac ttcccgtaca ccgagtcgca 60

caagaggctg acctcccttc acccggagat tgaggagctc ctgtacagcc aaaccgagaa 120

cacggagcac aagttcgttc tgaacgacag gaacaagcca atcatcttct ccatggctcg 180

tctcgaccgt gtgaagaact tgactgggct ggtggagctg tacggccgga acaagcggct 240

gcaggagctg gtgaacctcg tggtcgtctg cggcgaccat ggcaaccctt ccaag 295

<210> 611
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 611

ccggaggcaa aaaaagagtc tgcttttgct aggcggcggg cgttcgttgc tgctctttgc 60

ttcaagagtt aaatttacct accttgtcaa ggtcttgttc catcattgat ccgggtgtcg 120

ctttttagt agtctgatgg actgttagta gtttgcgttg cgtcggttga gagggaacgt 180

tggtggtggt ggtgtgtgtg cagtcaggcg tggtgctccc tttgtttcct ggatgggatg 240

ttgctccttg aataataatc gtagtggcct tggagccctt ttcctgaaat aagagcagca 300

tcctagtgct 310

<210> 612
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 612

cggaccgtgg gatcgagcag tacaacctga acgggcacat ccgctggatc tccgcccaga 60

tgaaccgcgt ccgcaacggc gagctgtacc gctacatctg cgacaccaag ggcgccttcg 120

tgcagcctgc tttctacgag gctttcgggc tgacggtggt tgaggccatg acctgcggcc 180

tgcccacgtt cgccaccgcc tacggcggtc cggccgagat catcgtgcac ggcgtgtctg 240

gctaccacat cgacccttac cagggcgaca aggcgtcggc cctgctcgtg gacttcttcg 300

acaagtg 307

<210> 613
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 613

cactccctac tcggagttca accataggtt ccaagagctt ggtttggaga agggttgggg 60

tgacactgcg aacgtgtact cgacacactc cacttgcttc ttgaccttct tgaggcccct 120

gatcctgcca acttggagaa gttccttgga actataccaa tgatgttcaa tgttgttatc 180

ctttctcctc atggctactt cgctcagtcc aatgtgcttg gataccctga cactggcggt 240

caggttgtgt acattctgga tcaagtccgt gctttggaga atgagatgct tctgaggatt 300

aa 302

<210> 614
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 614

acagccaaac cgagaacacg gagcacaagt tcgttctgaa cgacaggaac aagccaatca 60

tcttctccat ggctcgtctc gaccgtgtga agaacttgac tgggctggtg gagctgtacg 120

gccggaacaa gcggctgcag gagctggtga acctcgtggt cgtctgcagc gaccatggca 180

accсttccaa ggacaaggag gagcaggccg agttcaagaa gatgtttgac ctcatcgagc 240

agtacaacct gaacgagcac atccgctgga tcatccgcca gatgaaccgc gtccgcaacg 300

gcga 304

<210> 615
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 615

ataagatgtt tgacctcatc gagcagtaca acctgaacgg gcacatccgc tggatctccg 60

cccagatgaa ccgcgtccgc aacggcgagc tgtaccgcta catctgcgac accaagggcg 120

ccttcgtgca gcctgctttc tacgaggctt tcgggctgac ggtggttgag gccatgacct 180

gcggcctgcc cacgttcgcc accgcctacg gcagtccggc cgagatcatc gtgcacggcg 240

tgtctggcta ccacatcgac tcttaccagg gcgacaaggc gtcggccctg ctcgt 295

<210> 616
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 616

cggaaactac agtgacggaa accttgttgc gtggttgctc gcccacaaga tgggtgttac 60

tcactgtacc attgcccatg cgcttgagaa aactaagtac cctaactccg acctctactg 120

gaagaagttt gaggatcact accacttctc gtgccagttc accactgact tgattgcaat 180

gaaccattgc cgacttcatc atcaccagta ccttccaaga gatcgccgga aacaaggaca 240

ccgtcggcca gtacgagtca cacatggcgt tcacaatgcc tggcctgt 288

<210> 617
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 617

cccacgcgtc cgcacctcct cttggacctc ctggaggccc cagatccgtc caccctggag 60

aagttccttg gaacgatccc catggtgttc aatgtcgtta tcctctcccc tcatggttac 120

ttcgctcaag ctaatgtctt gggttaccct gacaccggag gccaggttgt ctacatcttg 180

gatcaagtgc gcgctatgga gaacgaaatg ctgctgagga tcaagcagtg tggtcttgac 240

atcacgccga agatccttat tgtcaccagg ttgctccctg atgcaactgg caccacctgt 300

g 301

<210> 618
<211> 294
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (150)
<223>

<400> 618

acctgcggcc tgcccacgtt cgccaccgcc tacgggggtc cggccgagat catcgtgcac 60

ggcgtgtctg gctaccacat cgacccttac cagggcgaca aggcgtcggc cctgctcgtg 120

gacttcttcg acaagtgcca ggcggagcgn agccactgga gcaagatctc ccagggcggg 180

ctccagcgta tcgaggagaa gtacacctgg aagctgtact cggagaggct gatgaccctc 240

accggcgtgt acgggttctg gaagtacgtg tccaacctgg agaggcgcga gacc 294

<210> 619
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 619

gctgtacggc cggaacaagc ggctgcagga gctggtgaac ctcgtggtcg tctgcggcga 60

ccatggcaac ccttccaagg acaaggagga gcaggccgag ttcaagaaga tgtttgacct 120

catcgagcag tacaacctga acgggcacat ccgctggatc tccgcccaga tgaaccgcgt 180

ccgcaacggc gagctgtacc gctacatctg cgacaccaag ggcgccttcg tgcagcctgc 240

tttctacgag gctttcgggc tgacggtggt tgaggccatg acctgcg 287

<210> 620

<211> 303
<212> nucleic acid
<213> Zea mays

<400> 620

agctcctgta cagccaaacc gagaacacgg agcacaagtt cgttctgaac gacaggaaca 60

agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaacttgact gggctggtgg 120

agctgtacgg ccggaacaag cggctgcagg agctggtgaa cctcgtggtc gtctgcggcg 180

accatggcaa cccttccaag gacaaggagg agcaggccga gttcaagaag atgtttgacc 240

tcatcgagca gtacaacctg aacgggcaca tccgctggat ctccgcccag atgaaccgcg 300

tcc 303

<210> 621
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 621

ccaagttcaa catcgtgtct cctggcgcgg acctgtccat ctacttcccg tacaccgagt 60

cgcacaagag gctgacctcc cttcacccgg agattgagga gctcctgtac agccaaaccg 120

agaacacgga gccacaagtt cgttctgaac gacaggaaca agccaatcat cttctccatg 180

gctcgtctcg accgtgtgaa gaacttgact gggctggtgg agctgtacgg ccggaacaag 240

cggctgcagg agctggtgaa cctcgtggtc gtctgcggcg accatggcaa cccttcca 298

<210> 622
<211> 306
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (298)
<223>

<400> 622

aacctgaacg ggcacatccg ctggatctcc gcccagatga accgcgtccg caacggcgag 60

ctgtaccgct acatctgcga caccaagggc gccttcgtgc agcctgcttt ctacgaggct 120

ttcgggctga cggtggttga ggccatgacc tgcggcctgc ccacgttcgc caccgcctac 180

ggcggtccgg ccgagatcat cgtgcacggc gtgtctggct accacatcga cccttaccag 240

ggcgacaagg cgtcggccct gctcgtggac ttcttcgaca agtgccaggc ggagcgangc 300

cactgg 306

<210> 623
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 623

actcggagag gctgatgacc ctcaccggcg tgtacgggtt ctggaagtac gtgtccaacc 60

tggagaggcg cgagacccgg cggtacctgg agatgctgta cgcgctcaag taccgcacca 120

tggcgagcac cgtgccgctg gccgtggagg gagagccctc cagcaagtga tgcgcgacgg 180

cggccacaga cctgatcgat cgatgagcga gagggagcac tcggagtgtc gtgtcttttc 240

ccttgccatt tctttctttt tttcccttcc cggaggcgaa aaaaagagtc tg 292

<210> 624
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 624

caggccaatc ctgacctgat catcggaaac tacagtgacg gaaaccttgt tgcgtgtttg 60

ctcgcccaca agatgggtgt tactcactgt accattgccc atgcgcttga gaaaactaag 120

taccctaact ccgacctcta ctggaagaag tttgaggatc actaccactt ctcgtgccag 180

ttcaccactg acttgattgc aatgaaccat gccgacttca tcatcaccag taccttccaa 240

gagatcgccg gaaacaagga caccgtcggc cagtacgagt cac 283

<210> 625
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 625

ggcgaacctc gtgatcgtcg ccggtgacca cggcaaggag tccaaggaca gggaggagca 60

ggcggagttc aagaagatgt acagcctcat cgacgagtac aagttgaagg gccatatccg 120

gtggatctcg gcgcagatga accgcgtccg caacggggag ctgtaccgct acatttgcga 180

taccaagggc gcattcgtgc agcctgcgtt ctacgaagcg ttcgggctga ctgtgatcga 240

gtccatgacg tgcggtctgc caacgatcgc gacctgccat ggtggccct 289

<210> 626
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 626

cccacgcgtc cgcttggatc aagtgcgcgc tatggagaac gaaatgctgc tgaggatcaa 60

gcagtgtggt cttgacatca cgccgaagat ccttattgtc accaggttgc tccctgatgc 120

aactggcacc acctgtggcc agcgccttga gaaggtcctt ggcaccgagc actgccatat 180

ccttcgcgtg ccattcagaa cagaaaacgg aatcgttcgc aagtggatct cgcgatttga 240

agtctggccg tacctggaga cttacactga tgacgtggcg catgagattg ctgga 295

<210> 627
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 627

ggagaacgaa atgctgctga ggatcaagca gtgtggtctt gacatcacgc cgaagatcct 60

tattgtcacc aggttgctcc ctgatgcaac tggcaccacc tgtggccagc gccttgagaa 120

ggtccttggc accgagcact gccatatcct tcgcgtgcca ttcagaacag aaaacggaat 180

cgttcgcaag tggatctcgc gatttgaagt ctggccgtac ctggagactt acactgatga 240

cgtggcgcat gagattgctg gagagcttca ggccaatcct gac 283

<210> 628
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 628

cccacgcgtc cgtgagtgtt tactacccgt atacggaaac cgacaagaga ctcactgcct 60

tccatcctga aatcgaggag ctcatctaca gcgacgtcga gaactccgag cacaagttcg 120

tgctgaagga caagaagaag ccgatcatct tctcgatggc gcgtctcgac cgcgtgaaga 180

acatgacagg cctggtcgag atgtacggca agaacgcgcg cctgagggag ctggcgaacc 240

tcgtgatcgt tgccggtgac cacggcaagg agtccaagga cagggaggag caggcggag 299

<210> 629
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 629

cgcgatttga agtctggccg tacctggaga cttacactga tgacgtggcg catgagattg 60

ctggagagct tcaggccaat cctgacctga tcatcggaaa ctacagtgac ggaaaccttg 120

ttgcgtgttt gctcgcccac aagatgggtg ttactcactg taccattgcc catgcgcttg 180

agaaaactaa gtaccctaac tccgacctct actggaagaa gtttgaggat cactaccact 240

tctcgtgcca gttcaccaca gacttgattg caatgaacca tgccga 286

<210> 630
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 630

caggaacttg gtctggagaa gggttggggt gattgcgcta agcgtgcaca ggagactatc 60

cacctcctct tggacctcct ggaggcccca gatccgtcca ccctggagaa gttccttgga 120

acgatcccca tggtgttcaa tgtcgttatc ctctcccctc atggttactt cgctcaagct 180

aatgtcttgg gttaccctga caccggaggc caggttgtct acatcttgga tcaagtgcgc 240

gctatggaga acgaaatgct gctgaggatc aagcagtgtg gtcttgacat cac 293

<210> 631
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 631

gaacgaaatg ctgctgagga tcaagcagtg tggtcttgac atcacgccga agatccttat 60

tgtcaccagg ttgctccctg atgcaactgg caccacctgt ggccagcgcc ttgagaaggt 120

ccttggcacc gagcactgcc atatccttcg cgtgccattc agaacagaaa acggaatcgt 180

tcgcaagtgg atctcgcgat ttgaagtctg gccgtacctg gagacttaca ctgatgacgt 240

ggcgcatgag attgctggag agcttcaggc caatcctgac ctgatc 286

<210> 632
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 632

cctgaacggg cacatccgct ggatctccgc ccagatgaac cgcgtccgca acggcgagct 60

gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag cctgctttct acgaggcttt 120

cgggctgacg gtggttgagg ccatgacctg cggcctgccc acgtttgcca cagcctacgg 180

cggtccggcc gagatcatcg tgcacggcgt gtctggctac cacatcgacc cttaccaggg 240

cgacaaggcg tcggccctgc tcgtggactt cttcgacaag tgccaggcg 289

<210> 633
<211> 308
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (11)
<223>

<400> 633

cggacggtgg ncgagacgcg tgggctgaca ccggaggcca ggttgtctac atcttggatc 60

aagtgcgcgc tatggagaac gaaatgctgc tgaggatcaa gcagtgtggt cttgacatca 120

cgccgaagat ccttattgtc accaggttgc tccctgatgc aactggcacc acctgtggcc 180

agcgccttga gaaggtcctt ggcaccgagc actgccatat ccttcgcgtg ccattcagaa 240

cagaaaacgg aatcgttcgc aagtggatct cgcgatttga agtctggccg tacctggaga 300

cttacact 308

<210> 634
<211> 286
<212> nucleic acid

<213> Zea mays

<400> 634

ggaggagcag gccgagttca agaagatgtt tgacctcatc gagcagtaca acctgaacgg 60

gcacatccgc tggatctccg cccagatgaa ccgcgtccgc aacggcgagc tgtaccgcta 120

catctgcgac accaagggcg ccttcgtgca gcctgctttc tacgaggctt tcgggctgac 180

ggtggttgag gccatgacct gcggcctgcc cacgttcgcc accgcctacg gggtccggc 240

cgagatcatc gtgcacggcg tgtcgggcta ccacatcgac ccttac 286

<210> 635
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 635

ccgtcggcca gtacgagtca cacatggcgt tcacaatgcc tggcctgtac cgcgttgtcc 60

acggcattga tgtgttcgac cccaagttca acatcgtgtc tcctggcgcg gacctgtcca 120

tctacttccc gtacaccgag tcgcacaaga ggctgacctc ccttcacccg gagattgagg 180

agctcctgta cagccaaacc gagaacacgg agcacaagtt cgttctgaac gacaggaaca 240

agccaatcat cttctccatg gctcgtctcg accgtgtgaa g 281

<210> 636
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 636

ggttacttcg ctcaagctaa tgtcttgggt taccctgaca ccggaggcca ggttgtctac 60

atcttggatc aagtgcgcgc tatggagaac gaaatgctgc tgaggatcaa gcagtgtggt 120

cttgacatca cgccgaagat ccttattgtc accaggttgc tccctgatgc aactggcacc 180

acctgtggcc agcgccttga gaaggtcctt ggcaccgagc actgccatat ccttcgcgtg 240

ccattcagaa cagaaaacgg aatcgttcgc aagtggatct cg 282

<210> 637
<211> 279
<212> nucleic acid

<213> Zea mays

<400> 637

catactctga atttcaccac aggttccagg aacttggtct ggagaagggt tggggtgatt 60

gcgctaagcg tgcacaggag actatccacc tcctcttgga cctcctggag gccccagatc 120

cgtccaccct ggagaagttc cttggaacga tccccatggt gttcaatgtc gttatcctct 180

cccctcatgg ttacttcgct caagctaatg tcttgggtta ccctgacacc ggaggccagg 240

ttgtctacat cttggatcaa gtgcgcgcta tggagaacg 279

<210> 638
<211> 356
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (280)
<223>

<400> 638

cgcgcttgtt ccggccgtac agctccacca gcccagtcaa gttcttcaca cggtcgagac 60

gagccatgga gaagaccatt ggcttgttcc tgtcgttcag aacgaacttg tgctccgtgt 120

tctcggtttg gctgtacagg agctcctcaa tctccgggtg aagggaggtc agcctcttgt 180

gcgactcggt gtacgggaag tagatggaca ggtccgcgcc aggagacacg atgttgaact 240

tggggtcgaa cacatcaatg ccgtggacaa cgcggtacan gccaggcatt gtgaacgcca 300

tgtgtgactc gtactggccg acggtgtcct tgtttccggc gatctctatg gaagta 356

<210> 639
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 639

accacttctc gtgccagttc accactgact tgattgcaat gaaccatgcc gacttcatca 60

tcaccagtac cttccaagag atcgccggaa acaaggacac cgtcggccag tacgagtcac 120

acatggcgtt cacaatgcct ggcctgtacc gcgttgtcca cggcattgat gtgttcgacc 180

ccaagttcaa catcgtgtct cctggcgcgg acctgtccat ctacttcccg tacaccgagt 240

cgcacaagag gctgacctcc cttcacccgg agattgagga gctcctgt 288

<210> 640
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 640

ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggcgacaa 60

ggcgtcggcc ctgctcgtgg acttcttcga caagtgccag gcggagcgag tccactggag 120

caagatctcc cagggcgggc tccagcgtat cgaggagaag tacacctgga agctgtactc 180

ggagaggctg atgaccctca ccggcgtgta cgggttctgg aagtacgtgt ccaacctgga 240

gaggcgcgag acccggcggt acctggagat gctgtacgcg ctcaagtacc gcac 294

<210> 641
<211> 311
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (13),(37),(72),(263)
<223> unsure at all n locations

<400> 641

cggacgcttg gtntcgacaa gtgccaggcg gagcgangcc actggagcaa gatctcccag 60

ggcgggctcc angcgtatcg aggagaagta cacctggaag ctgtactcgg agaggctgat 120

gaccctcacc ggcgtgtacg ggttctggaa gtacgtgtcc aacctggaga ggcgcgagac 180

ccggcggtac ctggagatgc tgtacgcgct caagtaccgc accatggcga gcaccgtgcc 240

gctggccgtg gagggagagc ccnccagcaa gtgatgcgtg acggcggcca cagacctgat 300

cgatcgatga g 311

<210> 642
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 642

agctcctgta cagccaaacc gagaacacgg agcacaagtt cgttctgaac gacaggaaca 60

agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaacttgact gggctggtgg 120

agctgtacgg ccggaacaag cggctgcagg agctgggcaa cctcgtggtc gtctgcggcg 180

accatggcaa cccttccaag gacaaggagg agcaggccga gttcaagaag atgtttgacc 240

tcatcgagca gtacaacctg aacgggcaca tccgctggat ct 282

<210> 643
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 643

aaggacaccg tggggcagta cgagtcccac atcgcgttca ctcttcctgg gctctaccgt 60

gtcgtccatg gcatcgatgt tttcgatccc aagttcaaca ttgtctcccc tggagcagac 120

atgagtgttt actacccgta tacggaaacc gacaagagac tcactgcctt ccatcctgaa 180

atcgaggagc tcatctacag cgacgtcgag aactccgagc acaagttcgt gctgaaggac 240

aagaagaagc cgatcatctt ctcgatggcg cgtctcgacc gcgt 284

<210> 644
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 644

gttcaacatc gtgtctcctg gcgcggacct gtccatctac ttcccgtaca ccgagtcgca 60

caagaggctg acctcccttc acccggagat tgaggagctc ctgtacagcc aaaccgagaa 120

cacggagcac aagttcgttc tgaacgacag gaacaagcca atcatcttct ccatggctcg 180

tctcgaccgt gtgaagaact tgactgggct ggtggagctg tacggccgga acaagcggct 240

gcaggagctg gtgaacctcg tggtcgtctg cggcga 276

<210> 645
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 645

ccccttggaac gatccccatg gtgttcaatg tcgttatcct ctcccctcat ggttacttcg 60

cacaagctaa tgtcttgggt taccctgaca ccggaggcca ggttgtctac atcttggatc 120

aagtgcgcgc tatggagaac gaaatgctgc tgaggatcaa gcagtgtggt cttgacatca 180

cgccgaagat ccttattgtc accaggttgc tccctgatgc aactggcacc acctgtggcc 240

agcgccttga gaaggtcctt ggcaccgagc actgccatat cc 282

<210> 646
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 646

gttgaggcca tgacctgcgg cctgcccacg tttgccacag cctacggcgg tccggccgag 60

atcatcgtgc acggcgtgtc tggctaccac atcgaccctt accagggcga caaggcgtcg 120

gccctgctcg tggacttctt cgacaagtgc caggcggacc cgagccactg gagcaagatc 180

tcccagggcg ggctccagcg tatcgaggag aagtacacct ggaagctcta ctcggagagg 240

ctgatgaccc tcaccggcgt gtacgggttc tggaagtacg tgtcca 286

<210> 647
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 647

gtaccctaac tccgacctct actggaagaa gtttgaggat cactaccact tctcgtgcca 60

gttcaccact gacttgattg caatgaacca tgccgacttc atcatcacca gtaccttcca 120

agagatcgcc ggaaacaagg acaccgtcgg ccagtacgag tcacacatgg cgttcacaat 180

gcctggcctg taccgcgttg tccacggcat tgatgtgttc gaccccaagt tcaacatcgt 240

gtctcctggc gcggacctgt ccatctactt cccgtacacc 280

<210> 648
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 648

cgatcatcgt gcacggcgtg tctggctacc acatcgaccc ttaccagggc gacaaggcgt 60

cggccctgct cgtggacttc ttcgacaagt gccaggcgga ccgagccact ggagcaagat 120

ctcccagggc gggctccagc gtatcgagga gaagtacacc tggaagctgt actcggagag 180

gctgatgacc ctcaccggcg tgtacgggtt ctggaagtac gtgtccaacc tggagaggcg 240

cgagacccgg cggtacctgg agatgctgta cgcgctcaag taccgc 286

<210> 649
<211> 331
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (282)
<223>

<400> 649

cacatcgacc cttaccaggg cgacaaggcg tcggccctgc tcgtggactt cttcgacaag 60

tgccagcgta tcgaggagaa gtacacctgg aagctgtact cggagaggct gatgaccctc 120

accggcgtgt acgggttctg gaagtacgtg tccaacctgg agaggcgcga gacccggcgg 180

tacctggaga tgctgtacgc gctcaagtac cgcaccatgg cgagcaccgt gccgctggcc 240

gtggagggag agccctccag caagtgatgc gtgacggcgg cnacagacct gatcgatcga 300

tgagcgagat ggagcactcg gagtgtcgtg t 331

<210> 650
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 650

gtttgacctc atcgagcagt acaacctgaa cgggcacatc cgctggatct ccgcccagat 60

gaaccgcgtc cgcaacggcg agctgtaccg ctacatctgc gacaccaagg gcgccttcgt 120

gcagcctgct ttctacgagg ctttcgggct gacggtggtt gaggccatga cctgcggcct 180

gcccacgttc gccaccgcct acggcgtacc ggccgagatc atcgtgcacg gcgtgtctgg 240

ctaccacatc gacccttacc agggcgacaa ggcgtcggcc ctgctcgt 288

<210> 651
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 651

gggttctgga agtacgtgtc caacctggag aggcgcgaga cccggcggta cctggagatg 60

ctgtacgcgc tcaagtaccg caccatggcg agcaccgtgc cgctggccgt ggagggagag 120

ccctccagca agtgatgcgc gacggcggcc acagacctga tcgatcgatg agcgagaggg 180

agcactcgga gtgtcgtgtc ttttcccttg ccatttcttt cttttttcc cttcccggag 240

gcgaaaaaa gagtctgctt ttgctaggcg gcgggcgttc gttgctgctc attgcttcaa 300

gagt 304

<210> 652
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 652

cggctcgagc tgagcacaca gacatcattc gcgttccctt cagaaatgag aatggcatcc 60

tccgcaagtg gatctctcgt tttgatgtct ggccatacct ggagacatac actgaggatg 120

tttccagtga aataatgaaa gaaatgcagg ccaagcctga ccttatcatt ggcaactaca 180

gcgatggcaa cctagtcgcc actctgctcg cgcacaagtt gggagtcact cagtgtacca 240

tcgctcatgc cttggagaaa accaaatacc ccaactcgga catat 285

<210> 653
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 653

gcacctgtcc accctacaag ctgatacccc atactctgaa tttcaccaca ggttccagga 60

acttggtctg gagaagggtt ggggtgattg cgctaagcgt gcacaggaga ctatccacct 120

cctcttggac ctcctggagg ccccagatcc gtccaccctg gagaagttcc ttggaacgat 180

ccccatggtg ttcaatgtcg ttatcctctc ccctcatggt tacttcgctc aagctaatgt 240

cttgggttac cctgacaccg gaagccaggt tgtctacatc ttggatcaa 289

<210> 654
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 654

cccttccaag gacaaggagg agcaggccga gttcaagaag atgtttgacc tcatcgagca 60

gtacaacctg aacgggcaca tccgctggat ctccgcccag atgaaccgcg tccgcaacgg 120

cgagctgtac cgctacatct gcgacaccaa gggcgccttc gtgcagcctg ctttctacga 180

ggctttcggg ctgacggtgg ttgaggccat gacctgcggc ctgcccacgt tcgccaccgc 240

ctacggcggt ccggccgaga tcatcgtgca cggcg 275

<210> 655
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 655

gttccttgga acgatcccca tggtgttcaa tgtcgttatc ctctcccctc atggttactt 60

cgctcaagct aatgtcttgg gttaccctga caccggaggc caggttgtct acatcttgga 120

tcaagtgcgc gctatggaga acgaaatgct gctgaggatc aagcagtgtg gtcttgacat 180

cacgccgaag atccttattg tcaccaggtt gctccctgat gcaactggca ccacctgtgg 240

ccagcgcctt gagaagctcc ttggcaccga gcactgcc 278

<210> 656
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 656

gaaaactaag taccctaact ccgacctcta ctggaagaag tttgaggatc actaccactt 60

ctcgtgccag ttcaccactg acttgattgc aatgaaccat gccgacttca tcatcaccag 120

taccttccaa gagatcgccg gaaacaagga caccgtcggc cagtacgagt cacacatggc 180

gttcacaatg cctggcctgt accgcgttgt ccacggcatt gatgtgttcg accccaagtt 240

caacatcgtg tctcctggcg cggacctgtc catctacttc ccgtacaccg agtcgc 296

<210> 657
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 657

aagaggctga cctcccttca cccggagatt gaggagctcc tgtacagcca aaccgagaac 60

acggagcaca agttcgttct gaacgacagg aacaagccaa tcatcttctc catggctcgt 120

ctcgaccgtg tgaagaactt gactgggctg gtggagctgt acggccggaa caagcggctg 180

caggagctgg tgaacctcgt ggtcgtctgc ggcgaccatg gcaacccttc caaggacaag 240

gaggagcagg ccgagttcaa gaagatgttt gacctcat 278

<210> 658
<211> 306
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (246)
<223>

<400> 658

ctggaggccc cagatccgtc caccctggag aagttccttg gaacgatccc catggtgtta 60

caatgtcgtt atcctctccc ctcatggtta cttcgctcaa gctaatgtct tgggttaccc 120

tgacaccgga ggccaggttg tctacatctt ggatcaagtg cgcgctatgg agaacgaaat 180

gctgctgagg atcaagcagt gtggtcttga catcacgccg aagatcctta ttgtcaccag 240

gttgcncccct gatgcaagtg gcaccacctg tggccagcgc tttgagaggg tcttggcccc 300

gaacat 306

<210> 659
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 659

ctcggagagg ctgatgaccc tcaccggcgt gtacgggttc tggaagtacg tgtccaacct 60

ggagaggcgc gagacccggc ggtacctgga gatgctgtac gcgctcaagt accgcaccat 120

ggcgagcacc gtgccgctgg ccgtggaggg agagccctcc agcaagtgat gcgcgacggc 180

ggccacagac ctgatcgatc gatgagcgag agggagcact cggagtgtcg tgtcttttcc 240

cttgccattt ctttcttttt ttcccttccc ggaggcgaaa aaaagagtct gcttttgcta 300

ggcggc 306

<210> 660
<211> 287
<212> nucleic acid<213> Zea mays

<400> 660

cggaccgtgg gcgtggcgca tgagattgct ggagagcttc aggccaatcc tgacctgatc 60

atcggaaact acagtgacgg aaaccttgtt gcgtgtttgc tcgcccacaa gatgggtgtt 120

actcactgta ccattgccca tgcgcttgag aaaactaagt accctaactc cgacctctac 180

tggaagaagt ttgaggatca ctaccacttc tcgtgccagt tcaccactga cttgattgca 240

atgaaccatg ccgacttcat catcaccagt accttccaag agatcgc 287

<210> 661
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 661

aagagatcgc cggaaacaag gacaccgtcg gccagtacga gtcacacatg gcgttcacaa 60

tgcctggcct gtaccgcgtt gtccacggca ttgatgtgtt cgaccccaag ttcaacatcg 120

tgtctcctgg cgcggacctg tccatctact tcccgtacac cgagtcgcac aagaggctga 180

cctcccttca cccggagatt gaggagctcc tgtacagcca aaccgagaac acggagcaca 240

agttcgttct gaacgacagg aacaagccaa tcatct 276

<210> 662
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 662

ggcgtcggcc ctgctcgtgg acttcttcga caagtgccag gcggacccga gccactggag 60

caagatctcc cagggcgggc tccagcgtat cgaggagaag tacacctgga agctctactc 120

ggagaggctg atgaccctca ccggcgtgta cgggttctgg aagtacgtgt ccaacctgga 180

gaggcgcgag acccggcggt acctggagat gctgtacgcg ctcaagtacc gcaccatggc 240

gagcaccgtg ccgctggccg tggagggaga gcctcc 276

<210> 663
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 663

gaatttcacc acaggttcca ggaacttggt ctggagaagg gttggggtga ttgcgctaag 60

cgtgcacagg agactatcca cctcctcttg gacctcctgg aggccccaga tccgtccacc 120

ctggagaagt tccttggaac gatccccatg gtgttcaatg tcgttatcct ctcccctcat 180

ggttacttcg ctcaagctaa tgtcttgggt taccctgaca ccggaggcca ggttgtctac 240

atcttggatc aagtgcgcgc tatggagaac gaaa 274

<210> 664
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 664

gaccacgcgt cgacagcgtc cgggacctgg ggccggaaac aaggacaccg tcggccagta 60

cgagtcacac atggcgttca caatgcctgg cctgtaccgc gttgtccacg gcattgatgt 120

gttcgacccc aagttcaaca tcgtgtctcc tggcgcggac ctgtccatct acttcccgta 180

caccgagtcg cacaagaggc tgacctccct tcacccggag attgaggagc tcctgtacag 240

ccaaaccgag aacacggagc acaagttcgt tctgaacgac aggaacaagc caatcatctt 300

ctccatgg 308

<210> 665
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 665

tgcccatgcg cttgagaaaa ctaagtaccc taactccgac ctctactgga agaagtttga 60

ggatcactac cacttctcgt gccagttcac cacagacttg attgcaatga accatgccga 120

cttcatcatc accagtacct tccaagagat cgccggaaac aaggacaccg tcggccagta 180

cgagtcacac atggcgttca caatgcctgg cctgtaccgc gtcgtccacg gcattgatgt 240

gttcgacccc aagttcaaca tcgtgtctcc tggcgcgga 279

<210> 666
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 666

atccccatgg tgttcaatgt cgttatcctc tcccctcatg gttacttcgc tcaagctaat 60

gtcttgggtt accctgacac cggaggccag gttgtctaca tcttggatca agtgcgcgct 120

atggagaacg aaatgctgct gaggatcaag cagtgtggtc ttgacatcac gccgaagatc 180

cttattgtca ccaggttgct ccctgatgca actggcacca cctgtggcca gcgccttgag 240

aaggtccttg gcaccgagca ctgccatatc cttcgcg 277

<210> 667
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 667

cctgggctct accgtgtcgt ccatggcatc gatgttttcg atcccaagtt caacattgtc 60

tcccctggag cagacatgag tgtttactac ccgtatacgg aaaccgacaa gagactcact 120

gccttccatc ctgaaatcga ggagctcatc tacagcgacg tcgagaactc cgagcacaag 180

ttcgtgctga aggacaagaa gaagccgatc atcttctcga tggcgcgtct cgaccgcgtg 240

aagaacatga caggcctggt cgagatgtac ggcaagaacg cgcg 284

<210> 668
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 668

ctgaaatcga ggagctcatc tacagcgacg tcgagaactc cgagcacaag ttcgtgctga 60

acgacaagaa gaagccgatc atcttctcga tggcgcgtct cgaccgcgtg aagaacatga 120

caggcctggt cgagatgtac ggcaagaacg cgcgcctgac ggagctggcg aacctcgtga 180

tcgttgccgg tgaccacggc aaggagtcca aggacaggga ggagcaggcg gagttcaaga 240

agatgtacag cctcatcgac gagtacgagt tgaagggcca tatccg 286

<210> 669
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 669

tctacttccc gtacaccgag tcgcacaaga ggctgacctc ccttcacccg gagattgagg 60

agctcctgta cagccaaacc gagaacacgg agcacaagtt cgttctgaac gacaggaaca 120

agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaacttgact gggctggtgg 180

agctgtacgg ccggaacaag cggctgcagg agctggtgaa cctcgtggtc gtctgcggcg 240

accatggcaa cccttccaag gacaaggagg a 271

<210> 670
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 670

cccgtacacc gagtcgcaca agaggctgac ctcccttcac ccggagattg aggagctcct 60

gtacagccaa accgagaaca cggagcacaa gttcgttctg aacgacagga acaagccaat 120

catcttctcc atggctcgtc tcgaccgtgt gaagaacttg actgggctgg tggagctgta 180

cggccggaac aagcggctgc aggagctggt gaacctcgtg gtcgtctgcg gcgaccatgg 240

caacccttcc agggacaagg aggagcaggc cga 273

<210> 671
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 671

ctcatctaca gcgacgtcga gaactccgag cacaagttcg tgctgaagga caagaagaag 60

ccgatcatct tctcgatggc gcgtctcgac cgcgtgaaga acatgacagg cctggtcgag 120

atgtacggca agaacgcgcg cctgagggag ctggcgaacc tcgtgatcgt tgccggtgac 180

cacggcaagg agtccaagga cagggaggag caggcggagt tcaagaagat gtacagcctc 240

atcgacgagt acaagttgaa gggccatatc 270

<210> 672
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 672

agattgagga gctcctgtac agccaaaccg agaacacgga gcacaagttc gttctgaacg 60

acaggaacaa gccaatcatc ttctccatgg ctcgtctcga ccgtgtgaag aacttgactg 120

ggctggtgga gctgtacggc cggaacaagc ggctgcagga gctggtgaac ctcgtggtcg 180

tctgcggcga ccatggcaac ccttccaagg acaaggagga gcaggccgag ttcaagaaga 240

tgtttgacct catcgagcag tacaacctga a 271

<210> 673
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 673

gagctgtacg gccggaacaa gcggctgcag gagctggtga acctcgtggt cgtctgcggc 60

gaccatggca acccttccaa ggacaaggag gagcaggccg agttcaagaa gatgtttgac 120

ctcatcgagc agtacaacct gaacgggcac atccgctgga tctccgccca gatgaaccgc 180

gtccgcaacg gcgagctgta ccgctacatc tgcgacacca agggcgcctt cgtgcagcct 240

gctttctacg aggctttcgg gctgacggtg gttg 274

<210> 674
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 674

cctcccttca cccggagatt gaggagctcc tgtacagcca aaccgagaac acggagcaca 60

agttcgttct gaacgacagg aacaagccaa tcatcttctc catggctcgt ctcgaccgtg 120

tgaagaactt gactgggctg gtggagctgt acggccggaa caagcggctg caggagctgg 180

tgaacctcgt ggtcgtctgc ggcgaccatg gcaacccttc caaggacaag gaggagcagg 240

ccgagttcaa gaagatgttt gacctcatc 269

<210> 675
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 675

ctgtggccag cgccttgaga aggtccttgg caccgagcac tgccatatcc ttcgcgtgcc 60

attcagaaca gaaaacggaa tcgttcgcaa gtggatctcg cgatttgaag tctggccgta 120

cctggagact tacactgatg acgtggcgca tgagattgct ggagagcttc aggccaatcc 180

tgacctgatc atcggaaact acagtgacgg aaaccttgtt gcgtgtttgc tcgcccacaa 240

gatgggtgtt actcactgta ccattgccca tgc 273

<210> 676
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 676

ccaagggcgc cttcgtgcag cctgctttct acgaggcttt cgggctgacg gtggttgacg 60

ccatgacctg cggcctgccc acgttcgcca ccgcctacgg cggtccggcc gagatcatcg 120

tgcacggcgt gtctggctac cacatcgacc cttaccaggg cgacaaggcg tcggccctgc 180

tcgtggactt cttcgacaag tgccaggcgg accgagccac tggagcaaga tctcccaggg 240

cgggctccag cgtatcgagg agaagtacac ctggaagctg tactc 285

<210> 677
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 677

atcgagcagt acaacctgaa cgggcacatc cgctggatct ccgcccagat gaaccgcgtc 60

cgcaacggcg agctgtaccg ctacatctgc gacaccaagg gcgccttcgt gcagcctgct 120

ttctacgagg ctttcgggct gacggtggtt gaggccatga cctgcggcct gcccacgttc 180

gccaccgcct acggcggtcc ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc 240

gacccttacc agggcgacaa ggcgtcggcc ctgctcgtgg a 281

<210> 678
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 678

ctggagcaga catgagtgtt tactacccgt atacggaaac cgacaagaga ctcactgcct 60

tccatcctga aatcgaggag ctcatcaaca gcgacgtcga gaactccgag cacaagttcg 120

tgctgaagga caagaagaag ccgatcatct tctcgatggc gcgtctcgac cgcgtgaaga 180

acatgacagg cctggtggag atgtacggca agaacgcgcg cctgagggag ctggcgaacc 240

tcgtgatcgt cgccggtgac cacggcaaga gtccaaggac agggaggagc aggcgga 297

<210> 679
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 679

cgtgcacggc gtgtctggct accacatcga cccttaccag ggcgacaagg cgtcggccct 60

gctcgtggac ttcttcgaca agtgccaggc ggacccgagc cactggagca agatctccca 120

gggcgggctc cagcgtatcg aggagaagta cacctggaag ctctactcgg agaggctgat 180

gaccctcacc ggcgtgtacg ggttctggaa gtacgtgtcc aacctggaga ggcgcgagac 240

ccggcggtac ctggagatgc tgtacgcgct caa 273

<210> 680
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 680

gtttgaggat cactaccact tctcgtgcca gttcaccact gacttgattg caatgaacca 60

tgccgacttc atcatcacca gtaccttcca agagatcgcc ggaaacaagg acaccgtcgg 120

ccagtacgag tcacacatgg cgttcacaat gcctggcctg taccgcgttg tccacggcat 180

tgatgtgttc gaccccaagt tcaacatcgt gtctcctggc gcggacctgt ccatctactt 240

cccgtacacc gagtcgcaca agaggctgac ctcccttca 279

<210> 681
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 681

cgcgttcact cttcctgggc tctaccgtgt cgtccatggc atcgatgttt tcgatcccaa 60

gttcaacatt gtctcccctg gagcagacat gagtgtttac tacccgtata cggaaaccga 120

caagagactc actgccttcc atcctgaaat cgaggagctc atcaacagcg acgtcgagaa 180

ctccgagcac aagttcgtgc tgaaggacaa gaagaagccg atcatcttct cgatggcgcg 240

tctcgaccgc gtgaagaaca tgacaggcct ggtggagatg tac 283

<210> 682
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 682

taccgagatc atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggcgacaa 60

ggcgtcggcc ctgctcgtgg agttcttcga caagtgccag gcggacccga gccactggag 120

caagatctcc cagggcgggc tccagcgtat cgaggagaag tacacctgga agctctactc 180

ggagaggctg atgaccctca ccggcgtgta cgggttctgg aagtacgtgt ccaacctgga 240

gaagcgcgat acccggcggt acctggagga gctgtacgcg ctcaagtacc gcaccatggc 300

ga 302

<210> 683
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 683

agaagatgtt tgacctcatc gagcagtaca acctgaacgg gcacatccgc tggatctccg 60

cccagatgaa ccgcgtccgc aacggcgagc tgtaccgcta catctgcgac accaagggcg 120

ccttcgtgca gcctgctttc tacgaggctt tcgggctgac ggtggttgag gccatgacct 180

gcggcctgcc cacgttcgcc accgcctacg gcggtccggc cgagatcatc gtgcacggcg 240

tgtctggcct acacatcgga ccttacccag gcgacaaagc gtcggcactg ctcgtggact 300

<210> 684
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 684

ggccgagttc aagaagatgt ttgacctcat cgagcagtac aacctgaacg ggcacatccg 60

ctggatctcc gcccagatga accgcgtccg caacggcgag ctgtaccgct acatctgcga 120

caccaagggc gccttcgtgc agcctgcttt ctacgaggct ttcgggctga cggtggttga 180

ggccatgacc tgcggcctgc ccacgtttgc cacagcctac ggcggtccgg ccgagatcat 240

cgtgcacggc gtgtctggct acca 264

<210> 685
<211> 325
<212> nucleic acid
<213> Zea mays

<400> 685

gtcggaacaa gcggctgcag gagctggtga cctcgtggtc gtctgcggcg accatggcaa 60

cccttccaag gacaaggatg atcaggccga gttcaagaag atgtttgacc tcatcgagca 120

gtacaacctg aacgggtaca tccgctggat ctccgcccag atgaaccgcg tccgcaacgg 180

cgagctgtac cgctacatct gcgacaccat aggcgccttc gtgcagcctg ctttctacga 240

ggctttcggg ctgacggtgg ttgaagctat gacctgcggc ctgcccgagt tcgccaccgc 300

ctagagggtc cggccagatc atcgt 325

<210> 686
<211> 291

<212>   nucleic acid
<213>   Zea mays

<400>   686

ggacctggga agtacacctg gaagctgtac tcggagaggc tgatgaccct caccggcgtg   60

tacgggttct ggaagtacgt gtccaacctg gagaggcgcg agacccggcg gtacctggag   120

atgctgtacg cgctcaagta ccgcaccatg gcgagcaccg tgccgctggc cgtggaggga   180

gagccctcca gcaagtgatg cgtgacggcg gccacagacc tgatcgatcg atgagcgaga   240

gggagcactc ggagtgtcgt gtcttttccc ttgccatttc tttctttctt c   291

<210>   687
<211>   279
<212>   nucleic acid
<213>   Zea mays

<400>   687

gcgttgtcca cggcattgat gtgttcgacc ccaagttcaa catcgtgtct cctggcgcgg   60

acctgtccat ctacttcccg tacaccgagt cgcacaagag gctgacctcc cttcacccgg   120

agattgagga gctcctgtac agccaaaccg agaacacgga gcacaagttc gttctgaacg   180

acaggaacaa gccaatcatc ttctccatgg ctcgtctcga ccgtgtgaag aacttgactg   240

ggctggtgga gctgtacggc cggaacaagc ggctgcagg   279

<210>   688
<211>   270
<212>   nucleic acid
<213>   Zea mays

<220>
<221>   unsure
<222>   (256)
<223>

<400>   688

gccctgctcg tggacttctt cgacaagtgc caggcggagc gagccactgg agcaagatct   60

cccagggcgg gctccagcgt atcgaggaga agtacacctg gaagctgtac tcggagaggc   120

tgatgaccct caccggcgtg tacgggttct ggaagtacgt gtccaacctg gagaggcgcg   180

agacccggcg gtacctggag atgctgtacg cgctcaagta ccgcaccatg gcgagcaccg   240

tgccgctggc cgtggnagga gagccctcag 270

<210> 689
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 689

ggctgacggt ggttgaggcc atgacctgcg gcctgcccac gtttgccaca gcctacggcg 60

gtccggccga gatcatcgtg cacggcgtgt ctggctacca catcgaccct taccagggcg 120

acaaggcgtc ggccctgctc gtggacttct tcgacaagtg ccaggcggac ccgagccact 180

ggagcaagat ctcccagggc gggctccagc gtatcgagga gaagtacacc tggaagctct 240

actcggagag gctgatgacc ctcaccggcg tgta 274

<210> 690
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 690

cggagcacaa gttcgttctg aacgacagga acaagccaat catcttctcc atggctcgtc 60

tcgaccgtgt gaagaacttg actgggctgg tggagctgta cggccggaac aagcggctgc 120

aggagctggt gaacctcgtg gtcgtctgcg gcgaccatgg caacccttcc aaggacaagg 180

aggagcaggc cgagttcaag aagatgtttg acctcatcga gcagtacaac ctgaacgggc 240

acatccgctg gatctccgcc cagatga 267

<210> 691
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 691

gccaaaccga gaacacggag cacaagttcg ttctgaacga caggaacaag ccaatcatct 60

tctccatggc tcgtctcgac cgtgtgaaga acttgactgg gctggtggag ctgtacggcc 120

ggaacaagcg gctgcaggag ctggtgaacc tcgtggtcgt ctgcggcgac catggcaacc 180

cttccaagga caaggaggag caggccgagt tcaagaagat gtttgacctc atcgagcagt 240

acaacctgaa cgggcacatc cgctggat 268

<210> 692
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 692

cgagaacacg gagcacaagt tcgttctgaa cgacaggaag gggccaatca tcttctccat 60

ggctcgtctc gaccgtgtga agaacttgac tgggctggtg gagctgtacg gccggaacaa 120

gcggctgcag gagctggtga acctcgtggt cgtctgcggc gaccatggca acccttccaa 180

ggacaaggag gagcaggccg agttcaagaa gatgtttgac ctcatcgagc agtacaacct 240

gaacgggcac atccgctgga tctccgccca gat 273

<210> 693
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 693

gagctggtga acctcgtggt cgtctgcggc gaccatggca acccttccaa ggacaaggag 60

gagcaggccg agttcaagaa gatgtttgac ctcatcgagc agtacaacct gaacgggcac 120

atccgctgga tctccgccca gatgaaccgc gtccgcaacg gcgagctgta ccgctacatc 180

tgcgacacca agggcgcctt cgtgcagcct gctttctacg aggctttcgg gctgacggtg 240

gttgaggcca tgacctgcgg cctgccca 268

<210> 694
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 694

cccacgcgtc cgggagctgg tgaacctcgt ggtcgtctgc ggcgaccatg gcaacccttc 60

caaggacaag gaggagcagg ccgagttcaa gaagatgttt gacctcatcg agcagtacaa 120

cctgaacggg cacatccgct ggatctccgc ccagatgaac cgcgtccgca acggcgagct 180

gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag cctgctttct acgaggcttt 240

cgggctgacg gtggttgagg ccatgacctg cggcctgccc 280

<210> 695
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 695

tgggcacatc cgctggatct ccgcccagat gaaccgcgtc cgcaacggcg agctgtaccg 60

ctacatctgc gacaccaagg gcgccttcgt gcagcctgct ttctacgagg ctttcgggct 120

gacggtggtt gaggccatga cctgcggcct gcccacgttt gccacagcct acggcggtcc 180

ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggcgacaa 240

ggcgtcggcc ctgctcgtgg acttcttcga 270

<210> 696
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 696

cggaccgtgg gctactggaa gaagtttgag gatcactacc acttctcgtg ccagttcacc 60

actgacttga ttgcaatgaa ccatgccgac ttcatcatca ccagtacctt ccaagagatc 120

gccggaaaca aggacaccgt cggccagtac gagtcacaca tggcgttcac aatgcctggc 180

ctgtaccgcg ttgtccacgg cattgatgtg ttcgacccca agttcaacat cgtgtctcct 240

ggcgcggacc tgtccatcta cttcccgtac accgagtcgc ac 282

<210> 697
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 697

ccttcgtgcg tccttctctg tcaaagtcca ttggcaatgg cgtgcagttc ctcaacaggc 60

acctgtcatc aaagctcttc catgacaagg agagcatgta ccccttgctc aacttccttc 120

gcgcccacaa ctacaagggg atgaccatga tgttgaacga cagaatccgc agtctcagtg 180

ctctgcaagg tgcgctgagg aaggctgagg agcacctgtc caccctacaa gctgataccc 240

catactctga atttcaccac aggttccagg aacttggtct ggaga 285

<210> 698
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 698

gttcgcaagt ggatctcgcg atttgaagtc tggccgtacc tggagactta cactgatgac 60

gtggcgcatg agattgctgg agagcttcag gccaatcctg acctgatcat cggaaactac 120

agtgacggaa accttgttgc gtgtttgctc gcccacaaga tgggtgttac tcactgtacc 180

attgcccatg cgcttgagaa aactaagtac cctaactccg acctctactg gaagaagttt 240

gaggatcact accacttctc gtgc 264

<210> 699
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 699

gagaaaacta agtaccctaa ctccgacctc tactggaaga agtttgagga tcactaccac 60

ttctcgtgcc agttcaccac tgacttgatt gcaatgaacc atgccgactt catcatcacc 120

agtaccttcc aagagatcgc cggaaacaag gacaccgtcg gccagtacga gtcacacatg 180

gcgttcacaa tgcctggcct gtaccgcgtt gtccacggca ttgatgtgtt cgaccccaag 240

ttcaacatcg tgtctcctgg cgcg 264

<210> 700
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 700

ggactttgag ccattcaatg cctccttccc ccgtccttct ctgtcaaagt ccattggcaa 60

tggcgtgcag ttcctcaaca ggcacctgtc atcaaagctc ttccatgaca aggagagcat 120

gtaccccttg ctcaacttcc ttcgcgccca caactacaag gggatgacca tgatgttgaa 180

cgacagaatc cgcagtctca gtgctctgca aggtgcgctg aggaaggctg aggagcacct 240

gtccacccta caagctgata cccc 264

<210> 701
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 701

cccacgcgtc cgcggaccgt gggatggtgt tcaatgtcgt tatcctctcc cctcatggtt 60

acttcgctca agctaatgtc ttgggttacc ctgacaccgg atgccaggtt gtatacatct 120

tggatcaagt gcgcgctatg gagaacgaaa tgctgctgag gatcaagcag tgtggtcttg 180

acatcacgcc gaagatcctt attgtcacca ggttgctccc tgatgcaact ggcaccacct 240

gtggccagcg ccttgagaag gtccttggca ccgagcactg ccatatcc 288

<210> 702
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 702

agcgtatcga ggagaagtac acctggaagc tctactcgga gaggctgatg accctcaccg 60

gcgtgtacgg gttctggaag tacgtgtcca acctggagag gcgcgagacc cggcggtacc 120

tggagatgct gtacgcgctc aagtaccgca ccatggcgag caccgtgccg ctggccgtgg 180

agggagagcc ctccagcaag tgatgcgcga cggcggccac agacctgatc gatcgatgag 240

cgagagggag cactcggagt gtcgtgtc 268

<210> 703
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 703

gagaaaacta agtaccctaa ctccgacctc tactggaaga agtttgagga tcactaccac 60

ttctcgtgcc agttcaccac tgacttgatt gcaatgaacc atgccgactt catcatcacc 120

agtaccttcc aagagatcgc cggaaacaag gacaccgtcg gccagtacga gtcacacatg 180

gcgttcacaa tgcctggcct gtaccgcgtt gtccacggca ttgatgtgtt cgaccccaag 240

ttcaacatcg tgtctcctgg cgcgg 265

<210> 704
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 704

gttcaacatc gtgtctcctg gcgcggacct gtccatctac ttcccgtaca ccgagtcgca 60

caagaggctg acctcccttc acccggagat tgaggagctc ctgtacagcc aaaccgagaa 120

cacggagcac aagttcgttc tgaacgacag gaacaagcca atcatcttct ccatggctcg 180

tctcgaccgt gtgaagaact tgactgggct ggtggagttg tacggccg 228

<210> 705
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 705

cggacgcgtg ggcggacgcg tgggcaagag gctgacctcc cttcacccgg agattgagga 60

gctcctgtac agccaaaccg agaacacgga gcacaagttc gatctgaacg acagcgaaca 120

agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaacttgact gggctggtgg 180

agctgtacgg ccggaacaag cggctgcagg agctggtgaa cctcgtggtc gtctgcggcg 240

accatggcaa cccttccaag gacaaggagg agcaggccga gttcaagaag atgtttg 297

<210> 706
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 706

attgaccctt accacagcga caaggccgcg gatatcctgg tcaacttctt tgacaaatgc 60

aaggcagatc cgagctactg ggacaagatc tcacagggcg gcctgcagag aatctatgag 120

aagtacacct ggaagctcta ctccgagagg ctgatgaccc tgaccggcgt gtacgggttc 180

tggaagtacg tgagcaacct ggagaggcgc gagacccgcc gctacatcga gatgttctac 240

gccctgaagt accgtagcct ggcaagccag ggtccgctgt ccttcg 286

<210> 707
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 707

gagaagggtt ggggtgattg cgctaagcgt gcacaggaga ctatccacct cctcttggac 60

ctcctggagg ccccagatcc gtccaccctg gagaagttcc ttgtacgatc cccatggtgt 120

tcaatgtcgt tatcctctcc cctcatggtt acttcgctca agctaatgtc ttgggttacc 180

ctgacaccgg aggccaggtt gtctacatct tggatcaagt gcgtgctatg gagaacgaaa 240

tgctgctgag gatcaagcag tgtggtcttg ac 272

<210> 708
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 708

acctgatcct gccaacttgg agaagttcct tggaactata ccaatgatgt tcaatgttgt 60

tatcctttct cctcatggct acttcgctca gtccaatgtg cttggatacc ctgacactgg 120

cggtcaggtt gtgtacattc tggatcaagt ccgtgctttg gagaatgaga tgcttctgag 180

gattaagcag caaggccttg atatcactcc gaagatcctc attgttacca ggctgttgcc 240

tgatgctgct gggactacgt gcggtcatcg gctggagaag gtcattggta ctgagcaca 299

<210> 709
<211> 329
<212> nucleic acid
<213> Zea mays

<400> 709

acgcaccgac cacggtccgc gacctgggtc gctggctgaa cgggcacatc cgctggatct 60

ccgcccagct gaaccgcgtc cgcaacgacg agctgtaccg ctacatctgc gacaccaagg 120

gcgccttcgt gcagcctgct ttctacgagg ctttcgggct gacggtggtt gacgccatga 180

cctgcggcct gcccacgttt gccacagcct acggcggtcc ggccgagatc atcgtgcacg 240

gcgtgtctgg ctaccacatc gacccttacc agggcgacaa ggcgtcggcc ctgctcgtgg 300

acttcttcga caagtgccag gctgacccg 329

<210> 710
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 710

tgagattgct ggagagcttc aggccaatcc tgacctgatc atcggatact acagtgacgg 60

ataccttgtt gcgtgtttgc tcgcccacaa gatgggtgtt actcactgta ccattgccca 120

tgcgcttgat aaaactaagt accctaactc cgacctctac tggaagaagt ttgatgatca 180

ctaccacttc tcgtgccagt tcaccactga cttgattgct atgaaccatg ccgacttcat 240

catcaccagt accttccaag agatcgccgg atacaaggac accgtcg 287

<210> 711
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 711

gggctctacc gtgtcgtcca tggcatcgat gttttcgatc ccaagttcaa cattgtctcc 60

cctggagcag acatgagtgt ttactacccg tatacggaaa ccgacaagag actcactgcc 120

ttccatcctg aaatcgagga gctcatctac agcgacgtcg agaactccga gcacaagttc 180

gtgctgaagg acaagaagaa gcccctcatc ttctcgatgg cgcgtctcga ccgcgtgaag 240

aacatgacag gcctggtcga gatgtacggc aagaacgcgc gcctgaggga 290

<210> 712
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 712

cccacgcgtc cgttcctcaa cacgcacctc ccatcaaagc tcttccatga caaggagagc 60

atgtacccct tgctcaactt ccttcgcgcc cacaactaca aggggaccac catgatgttg 120

aacgacagac tccgcagtct cagtgctctg caaggtgcgc tgaggaaggc tgaggagcac 180

ctgtccaccc tacaagctga taccccatac tctgaatttc accacaggtt ccaggaactt 240

ggtctggaga agggttgggg tgattgcgct aagcgtgcac aggagactat 290

<210> 713
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 713

caacaacttt gttcttgagc tggactttga gccattcaat gcctccttcc cccgtccttc 60

tctgtcaaag tccattggca atggcgtgca gttcctcaac aggcacctgt catcaaagct 120

cttccatgac aaggagagca tgtacccctt gctcaacttc cttcgcgccc acaactacaa 180

ggggatgacc atgatgttga acgacagaat ccgcagtctc agtgctctgc aaggtgcgct 240

gaggaaggct gaagagcacc tgtccaccct acaa 274

<210> 714
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 714

ctgatttcat catcaccagc acattccaag aaatcgcggg aagcaaggac accgtggggc 60

agtacgagtc ccacatcgcg ttcactcttc ctgggctcta ccgtgtcgtc catggcatcg 120

atgttttcga tcccaagttc aacattgtct cccctggagc agacatgagt gtttactacc 180

cgtatacgga aaccgacaag agactcactg ccttccatcc tgaaatcgag gagctcatca 240

acagcgacgt cgagaactcc gagcacaagt 270

<210> 715
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 715

gttcctcaac aggcacctgt catcaaagct cttccatgac aaggagagca tgtacccctt 60

gctcaacttc cttcgcgccc acaactacaa ggggatgacc atgatgttga acgacagaat 120

ccgcagtctc agtgctctgc aaggtgcgct gaggaaggct gaggagcacc tgtccaccct 180

acaagctgat accccatact ctgaatttca ccacaggttc caggaacttg gtctggagaa 240

gggttggggt gattgcgcta agcgtgc 267

<210> 716
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 716

cctaactccg acctctactg gaagaagttt gaggatcact accacttctc gtgccagttc 60

accactgact tgattgcaat gaaccatgcc gacttcatca tcaccagtac cttccaagag 120

atcgccggaa acaaggacac cgtcggccag tacgagtcac acatggcgtt cacaatgcct 180

ggcctgtacc gcgttgtcca cggcattgat gtgttcgacc ccaagttcaa catcgtgtct 240

cctggcgcgg acctgtccat ct 262

<210> 717
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 717

gaggatcact accacttctc gtgccagttc accactgact tgattgctat gaaccatgcc 60

gacttcatca tcaccagtac cttccaagag atcgccggat acaaggacac cgtcggccag 120

tacgagtcac acatggcgtt cacaatgcct ggtctgtacc gcgttgtcca cggcattgat 180

gtgttcgacc ccaagttcaa catcgtgtct cctggcgcgg acctgtccat ctacttcccg 240

tacaccgagt cgcacaagat gctgacctcc cttcaccc 278

<210> 718
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 718

ggtgattgcg ctaagcgtgc acaggagact atccacctcc tcttggacct cctggaggcc 60

ccagatccgt ccaccctgga gaagttcctt ggaacgatcc ccatggtgtt caatgtcgtt 120

atcctctccc ctcatggtta cttcgctcaa gctaatgtct tgggttaccc tgacaccgga 180

ggccaggttg tctacatctt ggatcaagtg cgcgctatgg agaacgaaat gctgctgagg 240

atcaagcagt gtggtcttga cat 263

<210> 719
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 719

acaacctgaa cgggcacatc cgctggatct ccgcccagat gaaccgcgtc cgcaacggcg 60

agctgtaccg ctaactctgc gacaccaagg gcgccttcgt gcagcctgca ttctacgagg 120

ctttcgggct gacggtggtt gaggccatga cctgcggcct gcccacgttc gccaccgcct 180

acggcgtacc ggccgagatc atcgtgcacg gcgtgtcggg ctaccacatc gacccttacc 240

agggcgacaa ggcgtcggcc ctgctcgtgg acttcttcga caagtgcca 289

<210> 720
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 720

caggcacctg tcatcaaagc tcttccatga caaggagagc atgtacccct tgctcaactt 60

ccttcgcgcc cacaactaca aggggatgac catgatgttg aacgacagaa tccgcagtct 120

cagtgctctg caaggtgctc tgaggaaggc tgaggagcac ctggcacccт acaagctgat 180

accccatact ctgaatttca ccacaggttc caggaacttg gtctggagaa gggttggggt 240

gattgcgcta agcgtgcaca ggagactatc cacctcctct tggacctcct ggaggcccc 299

<210> 721
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 721

ctctcagtgc gggctccagc gtatcgagga gaagtacacc tggaagctct actcggagag 60

gctgatgacc ctcaccggcg tgtacgggtt ctggaagtac gtgtccaacc tggagaggcg 120

cgagacccgg cggtacctgg agatgctgta cgcgctcaag taccgcacca tggcgagcac 180

cgtgccgctg gccgtggagg gagagccctc cagcaagtga tgcgcgacgg cggccacaga 240

cctgatcgat cgatgagcga gagggagcac tcggagtgtc gtgtctttat ccttgccgat 300

tctttctt 308

<210> 722
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 722

tggtcttgac atcacgccga agatccttat tgtcaccagg ttgctccctg atgcaactgg 60

caccacctgt ggccagcgcc ttgagaaggt ccttggcacc gagcactgcc atatccttcg 120

cgtgccattc agaacagaaa acggaatcgt tcgcaagtgg atctcgcgat ttgaagtctg 180

gccgtacctg gagacttaca ctgatgacgt ggcgcatgag attgctggag agcttcaggc 240

caatcctgac ctgatcatcg gaaa 264

<210> 723
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 723

ctgggattac attcgggtga atgtaagtga gctggctgtg gaggagctga gtgtttctga 60

gtacttggca ttcaaggaac agctggtgga tggacaatcc aacagcaact ttgtgcttga 120

gcttgatttt gagcccttca atgcctcctt tcctcgtcct tccatgtcga agtcaatcgg 180

aaatggagtg caattcctta accgacacct gtcgtccaag ttgttccggg acaaggagag 240

tttgtacccc ttgctgaat 259

<210> 724
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 724

cccacgcgtc cgcctcatcg agcagtacaa cctgaacggg cacatccgct ggatctccgc 60

ccagatgaac cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc 120

cttcgtgcag cctgctttct acgaggcttt cgggctgacg gtggttgagg ccatgacctg 180

cggcctgccc acgtttgcca cagcctacgg cggtccggcc gagatcatcg tgcacggcgt 240

gtctggctac cacatcgacc cttaccaggg cg 272

<210> 725
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 725

gaacatgaca ggcctggtcg agatgtacgg caagaacgcg cgcctgaggg agctggcgaa 60

cctcgtgatc gttgccggtg accacggcaa ggagtccaag gacagggagg agcaggcgga 120

gttcaagaag atgtacagcc tcatcgacga gtacaagttg aagggccata tccggtggat 180

ctcggcgcag atgaaccgcg tccgcaacgg ggagctgtac cgctacattt gcgatacgaa 240

gggcgcattc gtgcagcctg cgtg 264

<210> 726
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 726

tgagaatggc atcctccgca agtggatctc tcgttttgat gtctggccat acctggagac 60

atacactgag gatgtttcca gtgaaataat gaaagaaatg caggccaagc ctgaccttat 120

cattggcaac tacagcgatg gcaacctagt cgccactctg ctcgcacaca agttgggagt 180

cactcagtgt accatcgctc atgccttgga gaaaaccaaa taccccaact cggacatcta 240

cttggacaag ttcgacagcc agtac 265

<210> 727
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 727

acgagtcaca catggcgttc acaatgcctg gcctgtaccg cgttgtccac ggcattgatg 60

tgttcgaccc caagttcaac atcgtgtctc ctggcgcgga cctgtccatc tacttcccgt 120

acaccgagtc gcacaagagg ctgacctccc ttcacccgga gattgaggag ctcctgtaca 180

gccaaaccga gaacacggag cacaagttcg ttctgaacga caggaacaag ccaatcatct 240

tctccatggc tcgtctcgac cgtgtgaaga acttgactgg gctggtggag ctgtacggcc 300

gga 303

<210> 728
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 728

caactacaag gggatgacca tgatgttgaa cgacagaatc cgcagtctca gtgctctgca 60

aggtgcgctg aggaaggctg aggagcacct gtccacccta caagctgata ccccatactc 120

tgaatttcac cacaggttcc aggaacttgg tctggagaag ggttggggtg attgcgctaa 180

gcgtgcacag gagactatcc acctcctctt ggacctcctg gaggccccag atccgtccac 240

cctggagaag ttccttggaa 260

<210> 729
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 729

gtaccctaac tccgacctct actggaagaa gtttgaggat cactaccact tctcgtgcca 60

gttcaccact gacttgattg caatgaacca tgccgacttc atcatcacca gtaccttcca 120

agagatcgcc ggaaacaagg acaccgtcgg ccagtacgag tcacacatgg cgttcacaat 180

gcctggcctg taccgcgttg tccacggcat tgatgtgttc gaccccaagt tcaacatcgt 240

gtctcctggc gcggacct 258

<210> 730
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 730

tgcgaacgat cgcgacctgc catggtggcc ctgctgagat catcgtggac ggggtatctg 60

gcctgcacat tgacccttac cacagcgaca aggccgcgga tatcctggtc aacttctttg 120

acaaatgcaa ggcagatccg agctactggg acaagatctc acagggcggc ctgcagagaa 180

tttatgagaa gtacacctgg aagctctact ccgagaggct gatgaccctg accggcgtgt 240

acgggttctg gaagtacgtg agcaac 266

<210> 731
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 731

gtcgtctgcg gcgaccatgg caacccttcc aaggacaagg aggagcaggc cgagttcaag 60

aagatgtttg acctcatcga gcagtacaac ctgaacgggc acatccgctg gatctccgcc 120

cagatgaacc gcgtccgcaa cggcgagctg taccgctaca tctgcgacac caagggcgcc 180

ttcgtgcagc ctgctttcta cgaggctttc gggctgacgg tggttgaggc catgacctgc 240

ggcctgccca cgtttgccac agcctacggc ggtcgggccg agatcatcgt gca 293

<210> 732
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 732

gcgcgcctga gggagctggc gaacctcgtg atcgtcgccg gtgaccacgg caaggagtcc 60

aaggacaggg aggagcaggc ggagttcaag aagatgtaca gcctcatcga ctagtacaag 120

ttgaagggcc atatccggtg gatctcggcg cagatgaacc gcgtccgcaa cggggagctg 180

taccgctaca tttgcgatac caagggcgca ttcgtgcagc ctgcgttcta cgaagcgttc 240

ggcctgactg tgatcgagtc catga 265

<210> 733
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 733

ctgagagttc ctgagtacct gcagttcaag gaacagcttg tggaagaagg ccccaacaac 60

aactttgttc ttgagctgga ctttgagcca ttcaatgcct ccttcccccg tccttctctg 120

tcaaagtcca ttggcaatgg cgtgcagttc ctcaacaggc acctgtcatc aaagctcttc 180

catgacaagg agagcatgta cccctttgctc aacttccttc gcgcccacaa ctacaagggg 240

atgaccatga tgttgaacga c 261

<210> 734
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 734

aggacaccgt ggggcagtac gagtcccaca tcgcgttcac tcttcctggg ctctaccgtg 60

tcgtccatgg catcgatgtt ttcgatccca agttcaacat tgtctcccct ggagcagaca 120

tgagtgttta ctacccgtat acggaaacga caagagactc actgccttcc atcctgaaat 180

cgaggagctc atctacagcg acgtcgagaa ctccgagcac aagttcgtgc tgaaggacaa 240

gaagaagccg atcatcttct cgatggcgcg tc 272

<210> 735
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 735

atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggggacaa ggcgtcggcc 60

ctgctcgtgg acttcttcga caagtgccag gcggagcgag accactggag caagatctcc 120

cagggcgggc tccagcgtat cgaggagaag tacacctgga agctgtattc ggagaggctg 180

atgaccctca ccggcgtgta cgggttctgg aagtacgtgt ccaacctgga gaggcgcgag 240

acccggcggt acctggagat gctgtacgcg 270

<210> 736
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 736

ccctgacacc ggaggccagg ttgtctacat cttggatcaa gtgcgcgctc atggagaacg 60

aaatgctgct gaggatcaag cagtgtggtc ttgacatcac gccgaagatc cttattgtca 120

ccaggttgct ccctgatgca actggcacca cctgtggcca gcgccttgag aaggtccttg 180

gcaccggcac tgccatatcc ttcgcgtgcc attcagaaca gaaaacggaa tcgttcgcaa 240

gtggatctcg cgatttgaag tctggccgta 270

<210> 737
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 737

agctcatcaa cagcgacgtc gagaactccg agcacaagtt cgtgctgaag gacaagaaga 60

agccgatcat cttctcgatg gcgcgtctcg accgcgtgaa gaacatgaca ggcctggtgg 120

agatgtacgg caagaacgcg cgcctgaggg agctggcgaa cctcgtgatc gtcgccggtg 180

accacggcaa ggagtccaag gacagggagg agcaggcgga gttcaagaag atgtacagcc 240

tcatcgacga gtacaagttg aa 262

<210> 738
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 738

aaggagtcca aggacaggga ggagcaggcg gagttcaaga agatgtacag cctcatcgac 60

gagtacaagt tgaagggcca tatccggtgg atctcggcgc agatgaaccg cgtccgcaac 120

ggggagctgt accgctacat ttgcgatacg aagggcgcat tcgtgcagcc tgcgttctac 180

gaagcgttcg gcctgactgt gatcgagtcc atgacgtgcg gtctgccaac gatcgcgacc 240

tgccatggtg gccctgctga ga 262

<210> 739
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 739

ctcgaccttc tggaggcccc tgatcctgcc aacttggaga agttccttgg aactatacca 60

atgatgttta acgttgttat cctgtctcct catggctact tcgcccagtc caatgtgctt 120

ggatacccctg acactggcgg tcaggttgtg tacattctgg atcaggtccg tgctttggag 180

aatgagatgc ttctgaggat taagcagcaa ggccttgata tcactccgaa gatcctcatt 240

gttaccaggc tgttgcctga tg 262

<210> 740
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 740

gaaaaccaaa taccccaact cggacatcta cttggacaag ttcgacagcc agtaccactt 60

ctcttgccag ttcacagctg accttattgc catgaaccac actgatttca tcatcaccag 120

cacattccaa gaaatcgcgg gaagcaagga caccgtgggg cagtacgagt cccacatcgc 180

gttcactctt cctgggctct accgtgtcgt ccatggcatc gatgttttcg atcccaagtt 240

caacattgtc tcccctggag caga 264

<210> 741
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 741

cccacgcgtc cgcccacgcg tccgcccacg cgtccgatct tctcgatggc gcgtctcgac 60

cgcgtgaaga acatgacagg cctggtggag atgtacggca agaacgcgcg cctgaaggag 120

ctggcgaacc tcgtgatcgt cgccggtgac cacggcaagg agtccaagga cagggaggag 180

caggcggagt tcaagaagat gtacagcctc atcgacgagt acaagttgaa gggccatatc 240

cggtggatct cggcgcagat gaaccgcgtc cgcaacgggg agctgtaccg ctacatttgc 300

<210> 742
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 742

tgcaattcct taaccgacac ctgtcgtcca agttgttcca ggacaaggag agtttgtacc 60

ccttgctgaa cttcctcaag gctcataact acaagggcac gacgatgatg ttgaatgaca 120

gaatccaaag ccttcgtggt ctccaatcat ccctgagaaa ggcagaggag tatctactga 180

gtgttcctca agacactccc tactcggagt tcaaccatag gttccaagag cttggcttgg 240

agaagggttg gggtgacact gcgaacgtgt actcgaca 278

<210> 743
<211> 315
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (286)
<223>

<400> 743

acctggagag gcgcgagacc cggcggtacc tggagatgct gtacgcgctc aagtaccgca 60

ccatggcgag acaccgtgcc gctggccgtg gacggagagc cctccagcaa gtgatgcgcg 120

acggcggcca cagacctgat cgatcgatga gcgagaggga gcactcggag tgtcgtgtct 180

tttcccttgc catttctttc ttttttccc ttcccggagg cgaaaaaaag agtctgcttt 240

tgctaggcgg cgggcgttcg ttgctgctct ttgcttcaag agttanattt acctaccttg 300

tcaaggtctt gttcc 315

<210> 744
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 744

atttcaccac aggttccagg aacttggtct ggagaagggt tggggtgatt gcgctaagcg 60

tgcacaggag actatccacc tcctcttgga cctcctggag gccccagatc cgtccaccct 120

ggagaagttc cttggaacga ttcccatggt tttcaatgtc gttatccgct cccctcatgg 180

ttacgtcgct caagctaatg tcttgggtta ccctggcacc ggaggccagg ttgtctacat 240

cttggatcaa gtggcgcgct atggagaacg aaatg 275

<210> 745
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 745

gaggagctga gtgtttctga gtacttggca ttcaaggaac agctggtgga tggacaatcc 60

aacagcaact ttgtgcttga gcttgatttt gagcccttca atgcctcctt tcctcgtcct 120

tccatgtcga agtccatcgg aaatggagtg caattcctta accgacacct gtcgtccaag 180

ttgttccagg acaaggagag tttgtacccc ttgctgaact tcctcaaggc tcataactac 240

aagggcacga cgatgatgtt gaatgacaga a 271

<210> 746
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 746

cggaatcgtt cgcaagtgga tctcgcgatt tgacgtctgg ccgtacctgg agacttacac 60

tgatgacgtg gcgcatgaga ttgctggaga gcttcaggcc aatcctgacc tgatcatcgg 120

aaactacagt gacggaaacc ttgttgcgtg tttgctcgcc cacaagatgg gtgttactca 180

ctgtaccatt gcccatgcgc ttgagaaaac taagtaccct aactccgacc tctactggaa 240

gaagtttgag gatcacta 258

<210> 747
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 747

cgccgaagat ccttattgtc accaggttgc tccctgatgc aactggcacc acctgtggcc 60

agcgccttga gaaggtcctt ggcaccgagc actgccatat ccttcgcgtg ccattcagaa 120

cagaaaacgg aatcgttcgc aagtggatct cgcgatttga agtctggccg tacctggaga 180

cttacactga tgacgtggcg catgagattg ctggagagct tcaggccaat cctgacctga 240

tcatcggaaa ctacagtgac ggaaa 265

<210> 748
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 748

gtcgagaact ccgagcacaa gttcgtgctg aaggacaaga agaagccgat catcttctcg 60

atggcgcgtc tcgaccgcgt gaagaacatg acaggcctgg tcgagatgta cggcaagaac 120

gcgcgcctga gggagctggc gaacctcgtg atcgttgccg gtgaccacgg caaggagtcc 180

aaggacaggg aggagcaggc ggagttcaag aagatgtaca gcctcatcga cgagtacaag 240

ttgaagggcc atatccggtg gat 263

<210> 749
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 749

ggacggggta tctggcctgc acattgaccc ttaccacagc gacaaggccg cggatatcct 60

ggtcaacttc tttgacaaat gcaaggcaga tccgagctac tgggacaaga tctcacaggg 120

cggcctgcag agaatttatg agaagtacac ctggaagctc tactccgaga ggctgatgac 180

cctgaccggc gtgtacgggt tctggaagta cgtgagcaac ctggagaggc gcgagacccg 240

ccgctacatc gagatgt 257

<210> 750
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 750

ccttaccagg gcgacaaggc gtcggccctg ctcgtggact tcttcgacaa gtgccaggcg 60

gacccgagcc actggagcaa gatctcccag ggcgggctcc agcgtatcga ggagaagtac 120

acctggaagc tctactcgga gaggctgatg accctcaccg gcgtgtacgg gttctggaag 180

tacgtgtcca acctggagag gcgcgagacc cggcggtacc tggagatgct gtacgcgctc 240

aagtaccgca ccatggcgaa c 261

<210> 751
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 751

ccggtgacca cggcaaggag tccaaggaca gggaggagca ggcggagttc aagaagatgt 60

acagcctcat cgacgagtac aagttgaagg gccatatccg gtggatctcg gcgcagatga 120

accgcgtccg caacggggag ctgtaccgct acatttacga taccaagggc gcattcgtgc 180

agcctgcgtt ctacgaagcg ttcggcctga ctgtgatcga gtccatgacg tgcggtctgc 240

caacgatcgc gacctg 256

<210> 752
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 752

gaacgaaatg ctgctgagga tcaagcagtg tggtcttgac atcacgccga agatccttat 60

tgtcaccagg ttgctccctg atgcaactgg caccacctgt ggccagcgcc ttgagaaggt 120

ccttggcacc gagcactgcc atatccttcg cgtgccattc agaacagaaa acggaatcgt 180

tcgcaagtgg atctcgcgat ttgaagtctg gccgtacctg gagacttaca ctgatgacgt 240

ggcgcatgag attgctggag agcttcaggc caat 274

<210> 753
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 753

cggacggtgg gtcatcggaa actacagtga cggaaacctt gttgcgtgtt tgctcgccca 60

caagatgggt gttactcact gtaccattgc ccatgcgctt gagaacacta agtaccctaa 120

ctccgacctc tactggaaga agtttgagga tcactaccac ttctcgtgcc agttcaccac 180

tgacttgatt gcaatgaacc atgccgactt catcatcacc agtaccttcc aagagatcgc 240

cggaaacaag gacaccgtcg gccagtacga gtca 274

<210> 754
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 754

ctggagacat acactgagga tgtttccagt gaaataatga aagaaatgca ggccaagcct 60

gaccttatca ttggcaacta cagcgatggc aagctagtcg ccactctgct cgcacacaag 120

ttgggagtca ctcagtgtac catcgctcat gccttggaga aaaccaaata ccccaactcg 180

gacatctact tggacaagtt cgacagccag taccacttct cttgccagtt cacagctgac 240

cttattgcca tgaaccacac tga 263

<210> 755
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 755

gctcctgtac agccaaaccg agaacacgga gcacaagttc gatctgaacg acaggagcaa 60

gccaatcatc ttctccatgg ctcgtctcga ccgtgtgaag aacttgactg ggctggtgga 120

gctgtacggc cggaacaagc ggctgcagga gctggtgtac ctcgtggtcg tctgcggcga 180

ccatggcaac ccttccgagg acaaggatga tcaggccgag ttcatgaaga tgtttgacct 240

cgtcgagcag tacaacctga acgggcacat ccgc 274

<210> 756
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 756

tcgagatgta cggcaagaac gcgcgcctga gggagctggc gaacctcgtg atcgttgccg 60

gtgaccacgg caaggagtcc aaggacaggg aggagcaggc ggagttcaag aagatgtaca 120

gcctcatcga cgagtacaag ttgaagggcc atatccggtg gatctcggcg cagatgaacc 180

gcgtccgcaa cggggagctg taccgctaca tttgcgatac gaagggcgca ttcgtgcagc 240

ctgcgttcta cgaagc 256

<210> 757
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 757

catctacagc gacgtcgaga actccgagca caagttcgtg ctgaaggaca agaagaagcc 60

gatcatcttc tcgatggcgc gtctcgaccg cgtgaagaac atgacaggcc tggtcgagat 120

gtacggcaag aacgcgcgcc tgagggagct ggcgaacctc gtgatcgttg ccggtgacca 180

cggcaaggag tccaaggaca gggaggagca ggcggagttc aagaagatgt acagcctcat 240

cgacgagtac aagttgaagg g 261

<210> 758
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 758

cttccttcgc gcccacaact acaaggggat gaccatgatg ttgaacgaca gaatccgcag 60

tctcagtgct ctgcaaggtg cgctgaggaa ggctgaggag cacctgtcca ccctacaagc 120

tgatacccca tactctgaat ttcaccacag gttccaggaa cttggtctgg agaagggttg 180

gggtgattgc gctaagcgtg cacaggagac tatccacctc ctcttggacc tcctggaggc 240

cccagatccg tc 252

<210> 759
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 759

cccacgcgtc cgcccacgcg tccgccctgc tcgtggactt cttcgacaag tgccaggcgg 60

agcgagccac tggagcaaga tctcccaggg cgggctccag cgtatcgagg agaagtacac 120

ctggaagctg tactcggaga ggctgatgac cctcaccggc gtgtacgggt tctggaagta 180

cgtgtccaac ctggagaggc gcgagacccg gcggtacctg gagatgctgt acgcgctcaa 240

gtaccgcacc atggcgagca ccgtgccgct ggccgtgga 279

<210> 760
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 760

ggtggagctg tacggccgga acaagcggct gcaggagctg gtgaacctcg tggtcgtctg 60

cggcgaccat ggcaaccctt ccaaggacaa ggaggagcag gccgagttca agaagatgtt 120

tgacctcatc gagcagtaca acctgaacgg gcacatccgc tggatctccg cccagatgaa 180

ccgcgtccgc aacggcgagc tgtaccgcta catctgcgac accaagggcg ccttcgtgca 240

gcctgctttc tacg 254

<210> 761
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 761

ggagacttac actgatgacg tggcgcatga gattgctgga gagcttcagg ccaatcctga 60

cctgatcatc ggaaactaca gtgacggaaa ccttgttgcg tgtttgctcg cccacaagat 120

gggtgttact cactgtgcca gtgcgcatgc gcctgagaaa actaagtacc ctaactccga 180

cctctactgg aagaagtttg aggatcacta ccacttctcg tgccagttca ccactgactt 240

gattgcaatg aaccatgccg acttcatcat ca 272

<210> 762
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 762

atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggcgacaa ggcgtcggcc 60

ctgctcgtgg acttcttcga caagtgccag gcggaccgag ccactggagc aagatctccc 120

agggcgggct ccagcgtatc gaggagaagt acacctggaa gctgtactcg gagaggctga 180

tgaccctcac cggcgtgtac gggttctgga agtacgtgtc caacctggag aggcgcgaga 240

cccggcggta cctggagatg ctgtacgcgc tcaagtaccg caccatg 287

<210> 763
<211> 307
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (284)
<223>

<400> 763

cggacgcgtg gagcgtatcg aggagaagta cacctggaag ctgtactcgg agaggctgat 60

gaccctcaac ggcgtgtacg ggttctggaa gtacgtgtcc aacctggaga ggcgcgagac 120

ccggcggtac ctggagatgc tgtacgcgct caagtaccgc accatggcga gcaccgtgcc 180

gctggccgtg gagggagagc ctccagcaag tgatgcgtga cggcggccac agacctgatc 240

gatcgatgag cgagagggag cactcggagt gtcgtgtctt ttcncttgcc atttctttct 300

ttcttct 307

<210> 764
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 764

gacaccgtgg ggcagtacga gtcccacatc gcgttcactc ttcctgggct ctaccgtgtc 60

gtccatggca tcgatgtttt cgatcccaag ttcaacattg tctcccctgg agcagacatg 120

agtgtttact acccgtatac ggaaaccgac aagagactca ctgccttcca tcctgaaatc 180

gaggagctca tctacagcga cgtcgagaac tccgagcaca agttcgtgct gaaggacaag 240

aagaagccga tcatc 255

<210> 765
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 765

gtggagctgt acggccggaa caagcggctg caggagctgg tgaacctcgt ggtcgtctgc 60

ggcgaccatg gcaacccttc caaggacaag gaggagcagg ccgagttcaa gaagatgttt 120

gacctcatcg agcagtacaa cctgaacggg cacatccgct ggatctccgc ccagatgaaa 180

cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag 240

cctgctttct 250

<210> 766
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 766

gcggtctgcc aacgatcgcg acctgccatg gtggccctgc tgagatcatc gtggacgggg 60

tatctggcct gcacattgac ccttaccaca gcgacaaggc cgcggatatc ctggtcaact 120

tctttgacaa atgcaaggca gatccgagct actgggacaa gatctcacag ggcggcctgc 180

agagaattta tgagaagtac acctggaagc tctactccga gaggctgatg accctgaccg 240

gcgtgtacgg g 251

<210> 767
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 767

gcgggaagca aggacaccgt ggggcagtac gagtcccaca tcgcgttcac tcttcctggg 60

ctctaccgtg tcgtccatgg catcgatgtt ttcgatccca agttcaacat tgtctcccct 120

ggagcagaca tgagtgttta ctacccgtat acggaaaccg acaagagact cactgccttc 180

catcctgaaa tcgaggagct catctacagc gacgtcgaga actccgagca caagttcgtg 240

ctgaaggaca agaag 255

<210> 768
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 768

cttctttgac aaatgcaagg cagatccgag ctactgggac aagatctcac agggcggcct 60

gcagagaatc tatgagaagt acacctggaa gctctactcc gagaggctga tgaccctgac 120

cggcgtgtac gggttctgga agtacgtgag caacctggag aggcgcgaga cccgccgcta 180

catcgagatg ttctacgccc tgaagtaccg tagcctggca agccaggttc cgctgtcctt 240

cgattagtac ggggaaagaa gaagaagaag aagcccaggc cggagaacca tcgcctg 297

<210> 769
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 769

cccacgcgtc cggatgcttc tgaggattaa gcagcaaggc cttgatatca ctccgaagat 60

cctcattgtt accaggctgt tgcctgatgc tgctgggact acgtgcggtc agcggctgga 120

gaaggtcatt ggtactgagc acacagacat cattcgcgtt cccttcagaa atgagaatgg 180

catcctccgc aagtggatct ctcgttttga tgtctggcca tacctggaga catacactga 240

ggatgtttcc agtgaaataa tgaaa 265

<210> 770
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 770

caactacaag ggatgacca tgatgttgaa cgacagaatc cgcagtctca gtgctctgca 60

aggtgcgctg aggaaggctg aggagcacct gtccacccta caagctgata ccccatactc 120

tgaatttcac cacaggttcc aggaacttgg tctggagaag ggttggggtg attgcgctaa 180

gcgtgcacag gagactatcc acctcctctt ggacctcctg gaggccccag atccgtccac 240

ccggagaagt tcttgga 257

<210> 771
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 771

atgtaagtga gctggctgtg gaggagctga gtgtttctga gtacttggca ttcaaggaac 60

agctggtgga tggacaatcc aacagcaact ttgtgcttga gcttgatttt gagcccttca 120

atgcctcctt tcctcgtcct tccatgtcga agtccatcgg aaatggagtg caattcctta 180

accgacacct gtcgtccaag ttgttccagg acaaggagag tttgtacccc ttgctgaact 240

tcctcaa 247

<210> 772
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 772

cccacgcgtc cgcccacgcg tccggacaag gagagcatgt acccccttgct caacttcctt 60

cgcgcccaca actacaaggg gatgaccatg atgttgaacg acagaatccg cagtctcagt 120

gctctgcaag gtgcgctgag gaaggctgag gagcacctgt ccaccctaca agctgatacc 180

ccatactctg aatttcacca caggttccag gaacttggtc tggagaaggg ttggggtgat 240

tgcgctaagc gtgcacagga gactatccac 270

<210> 773
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 773

cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag 60

cctgctttct acgaggcttt cgggctgacg gtggttgagg ccatgacctg cggcctgccc 120

acgtttgcca cagcctacgg cggtccggcc gagatcatcg tgcacggcgt gtctggctac 180

cacatcgacc cttaccaggg cgacaaggcg tcggccctgc tcgtggactt cttcgacaag 240

tgccaggcgg acccgagcca ctggagca 268

<210> 774
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 774

cctgcacatt gacccttacc acagcgacaa ggccgcggat atcctggtca acttctttga 60

caaatgcaag gcagatccga gctactggga caagatctca cagggcggcc tgcagagaat 120

ttatgagaag tacacctgga agctctactc cgagaggctg atgaccctga ccggcgtgta 180

cgggttctgg aagtacgtga gcaccctgga gaggcgcgag acccgccgct acatcgagat 240

gttcta 246

<210> 775
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 775

acacacgcgt ccgcggacgc gtgggcccat actctgaatt tcaccacagg ttccaggaac 60

ttggtctgga gaagggttgg ggtgatagcg ctaagcgagc acaggagact atccacctcc 120

tcttggacct cctggaggcc ccagatccgt ccaccctgga gaagttcctt ggaacgatcc 180

ccatggtgtt caatgtcgtt atcctctccc ctcatggtta cttcgctcaa gctaatgtct 240

tgggttaccc tgacaccgga ggccaggttg tctacat 277

<210> 776
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 776

ggagaacgaa atgctgctga ggatcaagca gtgtggtctt gacatcacgc cgaagatcct 60

tattgtcacc aggttgctcc ctgatgcaac tggcaccacc tgtggccagc gccttgagaa 120

ggtccttggc accgagcact gccatatcct tcgcgtgcca ttcagaacag aaaacggaat 180

cgttcgcaag tggatctcgc gatttgaagt ctggccgtac ctggagactt acactgatga 240

cgtggcgc 248

<210> 777
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 777

ccggaaacaa ggacaccgtc ggccagtacg agtcacacat ggcgttcaca atgcctggcc 60

tgtaccgcgt tgtccacggc attgatgtgt tcgaccccaa gttcaacatc gtgtctcctg 120

gcgcggacct gtccatctac ttcccgtaca ccgagtcgca caagaggctg acctcccttc 180

acccggagat tgaggagctc ctgtacagcc aaaccgagaa cacggagcac aagttcgttc 240

tgaacgacag g 251

<210> 778
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 778

ggcggcgggc gttcgttgct gctctttgct tcaagagtta aatttaccta ccttgtcaag 60

gtcttgttcc atcattgatc cgggtgtcgc ttttagtagt ctgatggact gttagtagtt 120

tgcgttgcgt cggttgagag ggaacggtgg tggtggtggt gtgtgtgcag tcgggtgtgg 180

tgctcccttt gtttcctgga tgggatgttg ctccttgaat aataatcgta gtggccttgg 240

agcccttttc ctgaaataag agcagcatcc tagtgcttca ctt 283

<210> 779
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 779

gtgacggaaa ccttgttgcg tgtttgctcg cccacaagat gggtgttact cactgtacca 60

ttgcccatgc gcttgagaaa actaagtacc ctaactccga cctctactgg aagaagtttg 120

aggatcacta ccacttctcg tgccagttca ccactgactt gattgcaatg aaccatgccg 180

acttcatcat caccagtacc ttccaagaga tcgccggaaa caaggacacc gtcggccagt 240

acgagtcaca catggcgttc acaatgcctg gcctgtaccg cgttgtcc 288

<210> 780
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 780

ccttcacccg gagattgagg agctcctgta cagccaaacc gagaacacgg agcacaagtt 60

cgttctgaac gacaggaaca agccaatcat cttctccatg gctcgtctcg accgtgtgaa 120

gaacttgact gggctggtgg agctgtacgg ccggaacaag cggctgcagg agctggtgaa 180

cctcgtggtc gtctgcggcg accatggcaa cccttccaag gacaaggagg agcaggccga 240

gttc 244

<210> 781
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 781

acggcaagga gtccaaggac agggaggagc aggcggagtt caagaagatg tacagcctca 60

tcgacgagta caagttgaag ggccatatcc ggtggatctc ggcgcagatg aaccgcgtcc 120

gcaacgggga gctgtaccgc tacatttgcg ataccaaggg cgcattcgtg cagcctgcgt 180

tctacgaagc gttcggcctg actgtgatcg agtccatgac gtgcggtctg ccaacgatcg 240

cgacctg 247

<210> 782
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 782

tgcgttctac gaagcgttcg gcctgactgt gatcgagtcc atgacgtgcg gtctgccaac 60

gatcgcgacc tgccatggtg gccctgctga gatcatcgtg gacggggtat ctggcctgca 120

cattgaccct taccacagcg acaaggccgc ggatatcctg gtcaacttct ttgacaaatg 180

caaggcagat ccgagctact gggacaagat ctcacagggc ggcctgcaga gaatttatga 240

gaagtacacc tggaagctct a 261

<210> 783
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 783

ccgcgtccgc aacggcgagc tgtaccgcta catctgcgac accaagggcg ccttcgtgca 60

gcctgctttc tacgaggctt tcgggctgac ggtggttgag gccatgacct gcggcctgcc 120

cacgtttgcc acagcctacg gcggtccggc cgagatcatc gtgcacggcg tgtctggcta 180

ccacatcgac ccttaccagg gcgacaaggc gtcggccctg ctcgtggact tcttcgacaa 240

gtgccaggcg gacccga 257

<210> 784
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 784

gacaagaaga agccgatcat cttctcgatg gcgcgtctcg accgcgtgaa gaacatgaca 60

ggcctggtgg agatgtacgg caagaacgcg cgcctgaggg agctggcgaa cctcgtgatc 120

gtcgccggtg accacggcaa ggagtccaag gacagggagg agcaggcgga gttcaagaag 180

atgtacagcc tcatcgacga gtacaagttg aagggccata tccggtggat ctcggcgcag 240

atgaaccgcg t 251

<210> 785
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 785

ggaagtacgt gagcaacctg gagaggcgcg agacccgccg ctacatcgag atgttctacg 60

ccctgaagta ccgtagcctg gcaagccagg ttccgctgtc cttcgattag tacggggaaa 120

gaagaagaag aagaagccca ggccgctatt ttatcgcctg catttcgatc tgtttcaccg 180

caattcgcat tgttagtcgt gtattggagt tatgtgtact tggtttccaa gaactttagt 240

tccttctcgt ttttttcct tgtttgagcg tttttgggca gcgctggcct 290

<210> 786
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 786

cggacgcgtg gcgcgacgcg tgggctgcca acttggagaa gttccttgga actataccaa 60

tgatgttcaa tgttgttatc cttactcctc atggcagatt tcgctcagtc caatgtgctt 120

ggataccctg acactggcgg tcaggttgtg tacattctgg atcaagtccg tgctttggag 180

aatgagatgc ttctgaggat taagcagcaa ggccttgata tcactccgaa gatcctcatt 240

gttaccaggc tgttgcctga tgctgctggg actacgtgcg gtcagcggct ggagaaggtc 300

attggtactg a 311

<210> 787
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 787

cttgattttg agcccttcaa tgcctccttt cctcgtcctt ccatgtcgaa gtccatcgga 60

aatggagtgc aattccttaa ccgacacctg tcgtccaagt tgttccagga caaggagagt 120

ttgtacccct tgctgaactt cctcaaggct cataactaca agggcacgac gatgatgttg 180

aatgacagaa tccaaagcct tcgtggtctc caatcatccc tgagaaaggc agaggagtat 240

ctactgagtg ttcctcaa 258

<210> 788
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 788

atgagtgttt actacccgta tacggaaacc gacaagagac tcactgcctt ccatcctgaa 60

atcgaggagc tcatctacag cgacgtcgag aactccgagc acaagttcgt gctgaaggac 120

aagaagaagc cgatcatctt ctcgatggcg cgtctcgacc gcgtgaagaa catgacaggc 180

ctggtcgaga tgtacggcaa gaacgcgcgc ctgagggagc tggcgaacct cgtgatcgtt 240

gccg 244

<210> 789
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 789
ggcggacgcg tgggtgcggc gaccatggca acccttccaa ggacaaggag 60

gagcaggccg agttcaagaa gatgtatgac ctcatcgagc agtacaacct gaacgggcac 120

atccgctgga tctccgccca gatgaaccgc gtccgcaacg gcgagctgta ccgctacatc 180

tgcgacacca agggcgcctt cgtgcagcct gctttctacg aggctttcgg gctgacggtg 240

gttgaggcca tgacctgcgg cctgccccacg 270

<210> 790
<211> 274
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (168)...(186)
<223> unsure at all n locations

<400> 790

ggtacctgga gatgctgtac gcgctcaagt accgcaccat ggcgagcacc gtgccgctgg 60

ccgtggaggg agagccctcc agcaagtgat gcgtgacggc ggccacagac ctgatcgatc 120

gatgagcgag agggagcact cggagtgtcg tgtcttttcc cttgccannn nnnnnnnnnn 180

nnnnnntcct tcccggaggc gaaaaaaaaa gagtctgctt ttgctaggcg gcgggcgttc 240

gttgctgctc tttgcttcaa gagttaaatt tacc 274

<210> 791
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 791

cccacgcgtc cggccaaacc gagaacacgg agcacaagtt cgttctgaac gacaggaaca 60

agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaacttgact gggctggtgg 120

agctgtacgg ccggaacaag cggctgcagg agctggtgaa cctcgtggtc gtctgcggcg 180

accatggcaa cccttccaag gacaaggagg agcaggccga gttcaagaag atgtttgacc 240

tcatcgagca gtacaa 256

<210> 792
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 792

tgcggtacct ggagatgctg tacgcgctca agtaccgcac catggcgagc accgtgccgc 60

tggccgtgga gggagagccc tccagcaagt gatgcgtgac ggcggccaca gacctgatcg 120

atcgatgagc gagagggagc actcggagtg tcgtgtcttt tcccttgcca tttctttctt 180

tcttcttttt ccttcccgga ggcgaaaaaa aaagagtctg cttttgctag gcggcgggcg 240

ttcgttgctg ctctttgctt caagagttaa atttacctac cttgtca 287

<210> 793
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 793

caccgagcac tgccatatcc ttcgcgtgcc attcagaaca gaaaacggaa tcgttcgcaa 60

gtggatctcg cgatttgaag tctggccgta cctggagact tacactgatg acgtggcgca 120

tgagattgct ggagagcttc aggccaatcc tgacctgatc atcggaaact acagtgacgg 180

aaaccttgtt gcgtgtttgc tcgcccacaa gatgggtgtt actcactgta ccattgccca 240

tgcg 244

<210> 794
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 794

caccacctgt ggccagcgcc ttgagaaggt ccttggcacc gagcactgcc atatccttcg 60

cgtgccattc agaacagaaa acggaatcgt tcgcaagtgg atctcgcgat ttgaagtctg 120

gccgtacctg gagacttaca ctgatgacgt ggcgcatgag attgctggag agcttcaggc 180

caatcctgac ctgatcatcg gaaactacag tgacggaaac cttgttgcgt gtttgctcgc 240

ccac 244

<210> 795
<211> 282
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (243),(253),(258),(267),(269)...(271),(274),
(277)...(278),(281)

<223> unsure at all n locations

<400> 795

cactgacttg attgcaatga accatgccga cttcatcatc accagtacct tccaagagat 60

cgccggaaac aaggacaccg tcggccagta cgagtcacac atggcgttca caatgcctgg 120

cctgtaccgc gttgtccacg gcattgatgt gttcgacccc aagttcaaca tcgtgtctcc 180

tggcgcggac ctgtccatct acttcccgta caccgagtcg cacaagaggc tgacctcctt 240

tcnccggggt ttnggggncc tttaatncnn ncgnggnntg ng 282

<210> 796
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 796

gacaagaaga agccgatcat cttctcgatg gcgcgtctcg accgcgtgaa gaacatgaca 60

ggcctggtgg agatgtacgg caagaacgcg cgcctgaggg agctggcgaa cctcgtgatc 120

gtcgccggtg accacggcaa ggagtccaag gacagggagg agcaggcgga gttcaagaag 180

atgtacagcc tcatcgacga gtacaagttg aagggccata tccggtggat ctcggcgcag 240

atgaaccgc 249

<210> 797
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 797

gttatccttt ctcctcatgg ctacttcgct cagtccaatg tgcttggata ccctgacact 60

ggcggtcagg ttgtgtacat tctggatcaa gtccgtgctt tggagaatga gatgcttctg 120

aggattaagc agcaaggcct tgatatcact ccgaagatcc tcattgttac caggctgttg 180

cctgatgctg ctgggactac gtgcggtcag cggctggaga aggtcattgg tactgagcac 240

acagacat 248

<210> 798
<211> 295
<212> nucleic acid

<213> Zea mays

<400> 798

ggcgagctgt accgctacat ctgcgacacc aaggccgcct tcgtgcagcc tgctttctac 60

gaggctttcg ggctgacggt ggttgaggcc atgacctgcg gcctgcccac gtttgccaca 120

gcctacggcg gtccggccga gatcatcgtg cacggcgtgt cggctaccac atcgaccctt 180

accagggcga caaggcgtcg gccctgctcg tggacttctt cgacaagtgc caggcggacc 240

cgagccactg gagcaagatc tcccagggcg ggctccagcg tatcgaggag aagta 295

<210> 799
<211> 255
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (2),(56)
<223> unsure at all n locations

<400> 799

anagatgttt gacctcatcg agcagtacaa cctgaacggg cacatccgct ggatcnccgc 60

ccagatgaac cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc 120

cttcgtgcag cctgctttct acgaggcttt cgggctgacg gtggttgagg ccatgacctg 180

cggcctgccc acgttcgcca ccgcctacgg cgtccggccg agatcatcgt gcacggcgtg 240

tctggctacc acatc 255

<210> 800
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 800

cctgaacggg cacatccgct ggatctccgc ccagatgaac cgcgtccgca acggcgagct 60

gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag cctgctttct acgaggcttt 120

cgggctgacg gtggttgagg ccatgacctg cggcctgccc acgtttgcca cagcctacgg 180

cggtccggcc gagatcatcg tgcacggcgt gtctggctac cacatcgacc cttaccaggg 240

cgac 244

<210> 801
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 801

gtttgctcgc ccacaagatg ggtgttactc actgtaccat tgcccatgcg cttgagaaaa 60

ctaagtaccc taactccgac ctctactgga agaagtttga ggatcactac cacttctcgt 120

gccagttcac cactgacttg attgcaatga accatgccga cttcatcatc accagtacct 180

tccaagagat cgccggaaac aaggacaccg tcggccagta cgagtcacac atggcgtt 238

<210> 802
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 802

ggaccgggcc ttaccagggc gacaaggcgt cggccctgct cgtggacttc ttcgacaagt 60

actcaggcgg acccgagcca ctggagcaag atctcccagg gcgggctcca gcgtatcgag 120

gagaagtaca cctggaagct ctactcggag aggctgatga ccctcaccgg cgtgtacggg 180

ttctggaagt acgtgtccaa cctggagagg cgcgagaccc ggcggtacct ggagatgctg 240

tacgcgctca agtacc 256

<210> 803
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 803

aacctagtcg ccactctgct cgcgcacaag ttgggagtca ctcagtgtac catcgctcat 60

gccttggaga aaaccaaata ccccaactcg gacatatact tggacaaatt cgacagccag 120

taccacttct cttgccagtt ccagctgacc ttattgccat gaaccacacc gatttcatca 180

tcaccagcac attccatgaa atcgcgggaa gcaaggacac cgtggggcag tacgagtccc 240

acatcgcgtt ca 252

<210> 804
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 804

atgcatgctc gcgcacaaga tgggtgttac tcactgtacc attgcccatg cgcttgagaa 60

aactaagtac cctaactccg acctctactg gaagaagttt gaggatcact accacatctc 120

gtgccagttc accactgact tgattgcaat gaaccatgcc gacttcatca tcaccagtac 180

cttccagaga tcgccggtaa caaggacacc gtcggccagt acgagtcaca catggcgttc 240

acaatgcctg gactgtaccg cgttgtcgac ggcattgatg tgttcga 287

<210> 805
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 805

ggacgctggg aaaaaaaaga gtctgctttt gctaggcggc gggcgttcgt tgctgctctt 60

tgattcaaga gttaaattta cctaccttgt caaggtcttg ttccatcatt gatccgggtg 120

tcgcttttag tagtctgatg gactgttagt agtttgcgtt gcgtcggttg agagggaacg 180

gtggtggtgg tggtgtgtgt gcagtcgggt gtggtgctcc ctttgtttcc tggatgggat 240

gttgctcctt gaataataat cgtagtggcc ttggagccct tttcctg 287

<210> 806
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 806

gtctgctttt gctaggcggc gggcgttcgt tgctgctctt tgcttcaaga gttaaattta 60

cctaccttgt caaggtcttg ttccatcatt gatccgggtg tcgcttttag tagtctgatg 120

gactgttagt agtttgcgtt gcgtcggttg agagggaacg gtggtggtgg tggtgtgtgt 180

gcagtcgggt gtggtgctcc ctttgtttcc tggatgggat gttgctcctt gaataataat 240

cgtagtggcc ttggagccct tttcctgaaa taagag 276

<210> 807
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 807

gacccggcgg tacctggaga tgctgtacgc gctcaagtac cgcaacatgg cgagcacagt 60

gccgctggcc gtggagggag agccctccag caagtgatgc gtgacggcgg ccacagacct 120

gatcgatcga tgagcgagag ggagcactcg gagtgtcgtg tcttttccct tgccattact 180

ttctttcttc tttttccttc ccggaggcga aaaaaaaaga gtctgctttt gctaggcggc 240

gggcgttcgt tgct 254

<210> 808
<211> 321
<212> nucleic acid
<213> Zea mays

<400> 808

acggaccgcc agggtccgcg acctgcgagt ggctacggag gccgaggttg tctacatctt 60

ggatcaagtg cgcgctatgg agagccgaaa tgctgctgag gatcaagcag tgtggtcttg 120

acatcacgcc gaagatcctt attgtcacca ggttgctccc tgatgcaact ggcaccacct 180

gtggccagcg ccttgagaag gtccttggca ccgagcactg ccatatcctt cgcgtgccat 240

gtcagaacag aaaacggaat cgttcgcaag tggatctcgc gatttgaagt cgtgccgtac 300

ctggagactt acactgatga c 321

<210> 809
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 809

acgggttctg gaagtacgtg tccaacctgg agaggcgcga gacccggcgg tacctggaga 60

tgctgtacgc gctcaagtac cgcaccatgg cgagcaccgt gccgctggcc gtggagggag 120

agccctccag caagtgatgc gcgacggcgg ccacagacct gatcgatcga tgagcgagat 180

ggagcactcg gagtgtcgtg tcttttccct tgccatttct ttcttttttt cccttcccgg 240

aggcgaaaaa aagagtctgc ttttgctagg cgg 273

<210> 810
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 810

gatcgagtcc atgacgtgcg gtctgccaac gatcgcgacc tgccatggtg gccctgctga 60

gatcatcgtg gacggggtat ctggcctgca cattgaccct taccacagcg acaaggccgc 120

ggatatcctg gtcaacttct ttgacaaatg caaggcagat ccgagctact gggacaagat 180

ctcacagggc ggcctgcaga gaatttatga gaagtacacc tggaagctct actccgagag 240

g 241

<210> 811
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 811

acggaaaccg acaagagact cactgccttc catcctgaaa tcgaggagct catctacagc 60

gacgtcgaga actccgagca caagttcgtg ctgaaggaca agaagaagcc gatcatcttc 120

tcgatggcgc gtctcgaccg cgtgaagaac atgacaggcc tggtcgagat gtacggcaag 180

aacgcgcgcc tgagggagct ggcgaacctc gtgatcgttg ccggtgacca cggca 235

<210> 812
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 812

tgacctgcgg cctgcccacg tttgccacag cctacggcgg tccggccgag atcatcgtgc 60

acggcgtgtc tggctaccac atcgaccctt accagggcga caaggcgtcg gccctgctcg 120

tggacttctt cgacaagtgc caggcggacc cgagccactg gagcaagatc tcccagggcg 180

ggctccagcg tatcgaggag aagtacacct ggaagctcta ctcggagagg ctgatgaccc 240

tc 242

<210> 813
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 813

gggcgcattc gtgcagcctg cgttctacga agcgttcggc ctgactgtga tcgagtccat 60

gacgtgcggt ctgccaacga tcgcgacctg ccatggtggc cctgctgaga tcatcgtgga 120

cggggtatct ggcctgcaca ttgaccctta ccacagcgac aaggccgcgg atatcctggt 180

caacttcttt gacaaatgca aggcagatcc gagctactgg gacaagatct cacagggcgg 240

<210> 814
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 814

ggtggatctc ggcgcagatg aaccgcgtcc gcaacgggga gctgtaccgc tacatttgcg 60

atacgaaggg cgcattcgtg cagcctgcgt tctacgaagc gttcggcctg actgtgatcg 120

agtccatgac gtgcggtctg ccaacgatcg cgacctgcca tggtggccct gctgagatca 180

tcgtggacgg ggtatctggc ctgcacattg acccttacca cagcgacaag gccgcggata 240

tcct 244

<210> 815
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 815

caggccaatc ctgacctgat catcggaaac tacagtgacg gaaaccttgt tgcgtgtttg 60

ctcgcccaca agatgggtgt tactcactgt accattgccc atgcgcttga gaaaactaag 120

taccctaact ccgacctcta ctggaagaag tttgaggatc actaccactt ctcgtgccag 180

ttcaccactg acttgattgc aatgaaccat gccgacttca tcatcaccag taccttc 237

<210> 816
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 816

gctacttcgc ccagtccaat gtgcttggat accctgacac tggcggtcag gttgtgtaca 60

ttctggatca ggtccgtgct ttggagaatg agatgcttct gaggattaag cagcaaggcc 120

ttgatatcac tccgaagatc ctcattgtta ccaggctgtt gcctgatgct gctgggacta 180

cgtgcggtca gcggctggag aaggtcattg gtactgagca cacagacatc attcgcgtt 239

<210> 817
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 817

acaagcctga ccttatcatt ggcaactaca gcgatggcaa cctagtcgcc actctgctcg 60

cacacaagtt gggagtcact cagtgtacca tcgctcatgc cttggagaaa accaaatacc 120

ccaactcgga catctacttg gacaagttcg acagccagta ccacttctct tgccagttca 180

catgtgacct tattgccatg aaccacactg atttcatcat caccagcaca tccctcaaat 240

tcgcgggaag caaggacacc gtg 263

<210> 818
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 818

aaaagagtct gcttttgcta ggcggcgggc gttcgttgct gctctttgct tcaagagtta 60

aatttaccta ccttgtcaag gtcttgttcc atcattgatc cgggtgtcgc ttttagtagt 120

ctgatggact gttagtagtt tgcgttgcgt cggttgagag ggaacggtgg tggtggtggt 180

gtgtgtgcag tcgggtgtgg tgctcccttt gtttcctgga tgggatgttg ctccttgaat 240

aataatcgta gtggccttgg agcccttttc c 271

<210> 819
<211> 366
<212> nucleic acid
<213> Zea mays

<400> 819

agcttatcta gcttagctaa gtcggaattc gagtcgagcc taagttcaac attgtctctc 60

ctggagcaga catgtagtgt ttatcatctt atacggtaat cgataagaga ctcactgagt 120

ttcaacctga catcgagaac gtcatcaaca gcgacgtcga gaactccgag cacaagttcg 180

tgctgaatga caagaagaat ccgatcatct tctcgatgtc gcgtctcgac cgcgtgaaga 240

acatgtcagg cctggtggag atgtacggca agaacgcgcg cctgagggag ctggcgaacc 300

tcgtgatcgt cgccggtgac cacggcaagg agtccataga cagggaggag caggcggagt 360

tcaaga 366

<210> 820
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 820

agggtatctg gcctgcacat tgacccttac cacagcgaca aggccgcgga tatcctggtc 60

aacttctttg acaaatgcaa ggcagatccg agctactggg acaagatctc acagggcggc 120

ctgcagagaa tctatgagaa gtacacctgg aagctctact ccgagaggct gatgaccctg 180

accggcgtgt acgggttctg gaagtacgtg a 211

<210> 821
<211> 246
<212> nucleic acid
<213> Zea mays

<400> 821

gtccttccat gtcgaagtcc atcggaaatg gagtgcaatt ccttaaccga cacctgtcgt 60

ccaagttgtt ccaggacaag gagagtttgt acccccttgct gaacttcctc aaggctcata 120

actacaaggg cacgacgatg atgttgaatg acagaatcca aagccttcgt ggtctccaat 180

catccctgag aaaggcagag gagtatctac tgagtgttcc tcaagacact ccctactcgg 240

agttca 246

<210> 822
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 822

cgagtacaag ttgaagggcc atatccggtg gatctcggcg cagatgaacc gcgtccgcaa 60

cggggagctg taccgctaca tttgcgatac gaagggcgca ttcgtgcagc ctgcgttcta 120

cgaagcgttc ggcctgactg tgatcgagtc catgacgtgc ggtctgccaa cgatcgcgac 180

ctgccatggt ggccctgctg agatcatcgt ggacggggta tctggcctgc acattga 237

<210> 823
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 823

gtgacggaaa ccttgttgcg tgtttgctcg cccacaagat gggtgttact cactgtacca 60

ttgcccatgc gcttgagaaa actaagtacc ctaactccga cctctactgg aagaagtttg 120

aggatcacta ccacttctcg tgccagttca tcactgactt gattgcaatg aaccatgccg 180

acttcatcat caccagtacc ttccaagaga tcgccggaaa caaggacacc gtcggc 236

<210> 824
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 824

gaagggttgg ggtgacactg cgaacgtgta ctcgacacac tccacttgct tctcgacctt 60

ctggaggccc ctgatcctgc caacttggag aagttccttg gaactatacc aatgatgttc 120

aacgttgtta tcctgtctcc tcatggctac ttcgcccagt ccaatgtgct tggataccct 180

gacactggcg gtcaggttgt gtacattctg gatcaggtcc gtgccttgga gaatgagatg 240

cttctgagga ttaagcagca gggcctgata tca 273

<210> 825
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 825

cgcaactaca gcgatggcaa cctagtcgcc actctgctcg cacacaagtt gggagtcact 60

cagtgtacca tcgctcatgc cttggagaaa accagatacc ccaactcgga catctacttg 120

gacaagttcg acagccagta ccacttctct tgccagttca cagctgacct tattgccatg 180

aaccacactg atttcatcat caccagcaca ttccaagaaa tcgcgggaag caaggacacc 240

gtggg 245

<210> 826
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 826

ccaccctaca agctgatacc ccatactctg aatttcacca caggttccag gaacttggtc 60

tggagaaggg ttggggtgat tgcgctaagc gtgcacagga gactatccac ctcctcttgg 120

acctcctgga ggccccagat ccgtccaccc tggagaagtt ccttggaacg atccccatgg 180

tgttcaatgt cgttatcctc tcccctcatg gttacttcgc tcaagctaat gt 232

<210> 827
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 827

gcgtgtacgg gttctggaag tacgtgtcca acctggagag gcgcgagacc cggcggtacc 60

tggagatgct gtacgcgctc aagtaccgca ccatggcgag caccgtgccg ctggccgtgg 120

agggagagcc ctccagcgag tgatgcgtga cggcggccac agacctgatc gagcgatgag 180

cgagagggag cactcggagt gtcgtgtctt tgcccttgcc atttctttct ttcttctt 238

<210> 828
<211> 255
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (131)
<223>

<400> 828

ggcgagctgt accgctacat ctgcgacacc aagggcgcct tcgtgcagcc tgctttctac 60

gaggctttcg ggctgacggt ggttgaggcc atgacctgcg gcctgcccac gttcgccacc 120

gcctacggcg ntccggccga gatcatcgtg cacggcgtgt ctggctacca catcgaccct 180

taccagggcg acaaggcgtc ggccctgctc gtggacttct tcgacaagtg ccaggcggag 240

ctgagccact ggagc 255

<210> 829
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 829

ggttcgcgtg ccattcagaa cagaaaacgg aatcgttcgc aagtggatct cgcgatttga 60

agtctggccg tacctggaga cttacactga tgacgtggcg catgagattg ctggagagct 120

tcaggccaat cctgacctga tcatccggaa actacagtga cggaaacctt gttgcgtgtt 180

tgctcgccca caagatgggt gttactcact gtaccattgc ccatgcgctt gagaaaacta 240

agtaccctaa ctccgacctc tactggacga a 271

<210> 830
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 830

gagctgtacc gctacatttg cgataccaag ggcgcattcg tgcagcctgc gttctacgaa 60

gcgttcggcc tgactgtgat cgagtccatg acgtgcggtc tgccaacgat cgcgatctgc 120

catggtggcc ctgctgagat catcgtggac ggggtatctg gcctgcacat tgacccttac 180

cacagcgaca aggccgcgga tatcctggtc aacttctttg acaaatgcaa ggcagatccg 240

agctactggg acaagatctc 260

<210> 831
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 831

ctcaccggcg tgtacgggtt ctggaagtac gtgtccaacc tggagaggcg cgagacccgg 60

cggtacctgg agatgctgta cgcgctcaag taccgcacca tggcgagcac cgtgccgctg 120

gccgtggagg gagagccctc cagcaagtga tgcgcgacgg cggccacaga cctgatcgat 180

cgatgagcga gagggagcac tcggagtgtc gtgtcttttc gcttgccatt tctttctttt 240

attcgcttcg cggaggcgaa gaaaagagtc tg 272

<210> 832
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 832

cccacgcgtc cgcccacgcg tccgctcgtg ccagttcacc actgacttga ttgcaatgaa 60

ccatgccgac ttcatcatca ccagtacctt ccaagagatc gccggaaaca aggacaccgt 120

cggccagtac gagtcacaca tggcgttcac aatgcctggc ctgtaccgcg ttgtccacgg 180

cattgatgtg ttcgaccccca agttcaacat cgtgtctcct ggcgcggacc tgtccatcta 240

cttcccgtac ac 252

<210> 833
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 833

atcgcgacct gccatggtgg ccctgctgag atcatcgtgg acggggtatc tggcctgcac 60

attgaccctt accacagcga caaggccgcg gatatcctgg tcaacttctt tgacaaatgc 120

aaggcagatc cgagctactg ggacaagatc tcacagggcg gcctgcagag aatttatgag 180

aagtacacct ggaagctcta ctccgagagg ctgatgaccc tgaccggcgt gt 232

<210> 834
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 834

gcacgaggcg gacccgagcc actggagcaa gatctcccag ggcgggctcc agcgtatcga 60

ggagaagtac acctggaagc tctactcgga gaggctgatg accctcaccg gcgtgtacgg 120

gttctggaag tacgtgtcca acctggagag gcgcgagacc cggcggtacc tggagatgct 180

gtacgcgctc aagtaccgca ccatggcgag caccgtgccg ctggccgtgg agggagag 238

<210> 835
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 835

cggacgcgtg gtggcgcatg agattgctgg agagcttcag gccaatcctg acctgatcat 60

cggaaactac acgtgacgga aaccttgttg cgtgtttgct cgcccacaag atgggtgtta 120

ctcactgtac cattgcccat gcgcttgaga aaactaagta ccctaactcc gacctctact 180

ggaagaagtt tgaggatcac taccacttct cgtgccagtt caccactgac ttgattgcaa 240

tgaaccatgc cgacttcatc atcaccagta cc 272

<210> 836
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 836

tccgcaacgg cgagctgtac cgctacatct gcgacaccaa gggcgccttc gtgcagcctg 60

ctttctacga ggctttcggg ctgacggtgg ttgaggccat gacctgcggc ctgcccacgt 120

ttgccacagc ctacggcggt ccggccgaga tcatcgtgca cggcgtgtct ggctaccaca 180

tcgaccctta ccagggcgac aaggcgtcgg ccctgctcgt ggacttcttc gacaaatgcc 240

aggcggaccc gagccaatgg ag 262

<210> 837
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 837

cgagatgttc tacgccctga agtaccgtag cctggcaagc caggttccgc tgtccttcga 60

ttagtacggg gaaagaagaa gaagaagaag cccaggccgg agaaccatcg cctgcatttc 120

gatctgtttc accgcaattc gcattgttag tcgtgtattg gagttatgtg tacttggttt 180

ccaagaactt tggttccttg tatttatatc tttcttgtat gaacgttttt aggcagcgct 240

ggcctggttc ctagtatggt gagaattggc tgcacctttt gcttcgaata aaaatgcctg 300

ctcgttcacc tgt 313

<210> 838
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 838

ggcgaacctc gtgatcgttg ccggtgacca cggcaaggag tccaaggaca gggaggagca 60

ggcggagttc aagaagatgt acagcctcat cgacgagtac aagttgaagg gccatatccg 120

gtggatctcg gcgcagatga accgcgtccg caacggggag ctgtaccgct acatttgcga 180

tacgaagggc gcattcgtgc agcctgcgtt ctacgaagcg ttcgg 225

<210> 839
<211> 241
<212> nucleic acid
<213> Zea mays

<400> 839

ggagtatcta ctgagtgttc ctcaagacac tccctactcg gagttcaacc ataggttcca 60

agagcttggc ttggagaagg gttggggtga cactgcgaac gtgtaactcg acacactcca 120

cttgcttctc gaccttctgg aggcccctga tcctgccaac ttggagaagt tccttggaac 180

tataccaatg atgttcaacg ttgttatcct gtctcctcat ggctacttcg cccagtccaa 240

t 241

<210> 840
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 840

gcacgaggcg agctgtaccg ctacatctgc gacaccaagg gcgccttcgt gcagcctgct 60

ttctacgagg ctttcgggct gacggtggtt gaggccatga cctgcggcct gcccacgttt 120

gccacagcct acggcggtcc ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc 180

gacccttacc agggcgacaa ggcgtcggcc ctgctcgtgg acttcttcga caagt 235

<210> 841
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 841

gaggatcaag cagtgtggtc ttgacatcac gccgaagatc cttattgtca ccaggttgct 60

ccctgatgca actggcacca cctgtggcca gcgccttgag aaggtccttg gcaccgagca 120

ctgccatatc cttcgcgtgc cattcagaac agaaaacgga atcgttcgca agtggatctc 180

gcgatttgaa gtctggccgt acctggagac ttacactgat gacgtg 226

<210> 842
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 842

ggagcacctg tccaccctac aagctgatac cccatactct gaatttcacc acaggttcca 60

ggaacttggt ctggagaagg gttggggtga ttgcgctaag cgtgcacagg agactatcca 120

cctcctcttg gacctcctgg aggccccaga tccgtccacc ctggagaagt tccttggaac 180

gatccccatg gtgttcaatg tcgttatcct ctcccctcat ggttact 227

<210> 843
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 843

gcccacaaga tgggtgttac tcactgtacc attgcccatg cgcttgagaa aactaagtac 60

cctaactccg acctctactg gaagaagttt gaggatcact accacttctc gtgccagttc 120

accactgact tgattgcaat gaaccatgcc gacttcatca tcaccagtac cttccaagag 180

atcgccggaa acaaggacac cgtcggccag tacgagtcac acatgg 226

<210> 844

<211> 237
<212> nucleic acid
<213> Zea mays

<400> 844

cagaatccaa agccttcgtg gtctccaatc atccctgaga aaggcagagg agtatctact 60

gagtgttcct caagacactc cctactcgga gttcaaccat aggttccaag agcttggctt 120

ggagaagggt tggggtgaca ctgcgaacgt gtactcgaca cactccactt gcttctcgac 180

cttctggagg cccctgatcc tgccaacttg gagaagttcc ttggaactat accaatg 237

<210> 845
<211> 234
<212> nucleic acid
<213> Zea mays

<400> 845

ggcgaacctc gtgatcgttg ccggtgacca cggcaaggag tccaaggaca gggaggagca 60

ggcggagttc aagaagatgt acagcctcat cgacgagtac aagttgaagg gccatatccg 120

gtggatctcg gcgcagatga accgcgtccg caacggggag ctgtaccgct acatttgcga 180

tacgaagggc gcattcgtgc agcctgcgtt ctacgaagcg ttcggcctga ctgt 234

<210> 846
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 846

atccggtgga tctcggcgca gatgaaccgc gtccgcaacg gggagctgta ccgctacatt 60

tgcgatacga acggcgcatt cgtgcagcct gcgttctacg aagcgttcgg cctgactgtg 120

atcgagtcca tgacgtgcgg tctgccaacg atcgcgacct gccatggtgg ccctgctgag 180

atcatcgtgg acggggtatc tggcctgcac attgaccctt accacagcga caaggccgcg 240

gat 243

<210> 847
<211> 238
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (58)
<223>

<400> 847

gcgttgtcca cggcattgat gtgttcgacc ccaaagttca acatcgtgtc tcctggcncg 60

gacctgtcca tctacttccc gtacaccgag tcgcacaaga ggctgacctc ccttcacccg 120

gagattgagg agctcctgta cagccaaacc gagaacacgg agcacaagtt cgttctgaac 180

gacaggaaca agccaatcat cttctccatg gctcgtctcg accgtgtgaa gaattgaa 238

<210> 848
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 848

ggcaacggcg tgtctggcta ccacatcgac ccttaccagg gcgacaaggc gtcggccctg 60

ctcgtggact tcttcgacaa gtgccaggcg gacccgagcc actggagcaa gatctcccag 120

ggcgggctcc agcgtatcga ggagaagtac acctggaagc tctactcgga gaggctgatg 180

accctcaccg gcgtgtacgg gttctggaag tacgtgtcca acctggag 228

<210> 849
<211> 217
<212> nucleic acid
<213> Zea mays

<400> 849

cgatcatctt ctcgatggcg cgtctcgacc gcgtgaagaa catgacaggc ctggtcgaga 60

tgtacggcaa gaacgcgcgc ctgagggagc tggcgaacct cgtgatcgtt gccggtgacc 120

acggcaagga gtccaaggac agggaggagc aggcggagtt caagaagatg tacagcctca 180

tcgacgagta caagttgaag ggccatatcc ggtggat 217

<210> 850
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 850

cccacgcgtc cgctggtgaa cctcgtggtc gtctgcggcg accatggcaa cccttccaag 60

gacaaggagg agcaggccga gttcaagaag atgtttgacc tcatcgagca gtacaacctg 120

aacgggcaca tccgctggat ctccgcccag atgaaccgcg tccgcaacgg cgagctgtac 180

cgctacatct gcgacaccaa gggcgccttc gtgcagcctg ctttctacga ggcttt 236

<210> 851
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 851

caagcggctg caggagctgg tgaacctcgt ggtcgtctgc ggcgaccctg gcaacccttc 60

caaggacaag gaggagcagg ccgagttcaa gaagatgttt gacctcatcg agcagtacaa 120

cctgaacggg cacatccgct ggatctccgc ccagatgaac cgcgtccgca acggcgagct 180

gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag cc 222

<210> 852
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 852

cccttccaag gacaaggagg agcaggccga gttcaagaag atgtttgacc tcatcgagca 60

gtacaacctg aacgggcaca tccgctggat ctccgcccag atgaaccgcg tccgcaacgg 120

cgagctgtac cgctacatct gcgacaccaa gggcgccttc gtgcagcctg ctttctacga 180

ggctttcggg ctgacggtgg ttgaggccat gacctgcggc ctgc 224

<210> 853
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 853

cgtgtctcct ggcgcggacc tgtccatcta cttcccgtac accgagtcgc acaagaggct 60

gacctccctt cacccggaga ttgaggagct cctgtacagc acacggagca caagttcgtt 120

ctgaacgaca ggaacaagcc aatcatcttc tccatggctc gtctcgaccg tgtgaagaac 180

ttgactgggc tggtggagct gtacggccgg aacaagcggc tgcaggagct ggtgaactcg 240

tggtcgtctc gagcgacatg gcaac 265

<210> 854
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 854

gtacgccttg ctcaacttcc ttcgcgccca caactacaag gggatgacca tgatgttgaa 60

cgacagaatc cgcagtctca gtgctctgca aggtgcgctg aggaaggctg aggagcacct 120

gtccacccta caagctgata ccccatactc tgaatttcac cacaggttcc aggaacttgg 180

tctggagaag ggttggggtg attgcgctaa gcgtgcacag gagactatcc acctcctctt 240

ggacctcctg gaggccccag 260

<210> 855
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 855

ggacctggtg accctcaccg gcgtgtacgg gttctggaag tacgtgtcca acctggagag 60

gcgagcgacc cggcggtacc tggagatgct gtacgcgctc aagtaccgca ccatggcgag 120

caccgtgccg ctggccgtgg agggagagcc ctccagcaag tgatgcgtga cggcggccac 180

agacctgatc gatcgatgag cgagagggag cactcggagt gtcgtgtctt ttcccttgcc 240

atttctttct ttcttctttt 260

<210> 856
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 856

tggtgacact gcgaaggtgt actcgacaca ctcaacttgc ttcttgacct tcttgaggcc 60

cctgatcctg ccaacttgga gaagttcctt ggaactatac caatgatgtt caatgttgtt 120

atcctttctc ctcatggcta cttcgctcag tccaatgtgc ttggataccc tgacactggc 180

ggtcaggttg tgtacattct ggatcaagtc cgtgctttgg agaatgagat gcttctgagg 240

attaagcagc aagccttgat atcact 266

<210> 857
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 857

gcacgaggcg ccttcgtgca gcctgctttc tacgaggctt tcgggctgac ggtggttgag 60

gccatgacct gcggcctgcc cacgtttgcc acagcctacg gcggtccggc cgagatcatc 120

gtgcacggcg tgtctggcta ccacatcgac ccttaccagg gcgacaaggc gtcggccctg 180

ctcgtggact tcttcgacaa gtgccaggcg gacccgagcc actggagcaa gat 233

<210> 858
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 858

ccaagttcaa catcgggtct cctggcacgg acctgtccat ctacttcccg tacaccgagt 60

cgcacaagat gctgacctcc cttcagccgg agatttacga gctcctgtac aggcaaaccg 120

agaacacgga gcacaagttc gttctgaacg acagggacaa gccaatcatc ttctccatgg 180

ctcgtctcga ccgtgtgaag aactttactg ggctggtgga gctgt 225

<210> 859
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 859

gcggcgggtc tcgcgccgct acatcgagat gttctacgcc ctgaagtacc gtagcctggc 60

aagccaggtt ccgctgtcct tcgattagta cggggaaaga agaagaagaa gaagcccagg 120

ccggagaacc atcgcctgca agtcgatctg tttcaccgca attcgcattg ttagtcgtgt 180

attggagtta tgtgtacttg gtttccaaga actttggttc cttgtttttt tttctttctt 240

gtttgagcgg ttttgggcag cgctggcctg gttcc 275

<210> 860
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 860

cggacgcgtg ggcggacgcg tgggcggacg cgtgggttgg aactatacca atgatgttca 60

acgttgttat cctgtctcct catggctact tcgaccagtc caatgtgctt ggataccctg 120

acactggcgg tcaggttgtg tacattctgg atcaggtccg tgctttggag aatgagatgc 180

ttctgaggat taagcagcaa ggccttgata tcactccgaa gatcctcatt gttaccaggc 240

tgttgcctga tgctgctggg actacgt 267

<210> 861
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 861

gcacgagcca acctggagag gcgcgagacc cggcggtacc tggagatgct gtacgcgctc 60

aagtaccgca ccatggcgag caccgtgccg ctggccgtgg agggagagcc ctccagcaag 120

tgatgcgcga cggcggccac agacctgatc gatcgatgag cgagagggag cactcggagt 180

gtcgtgtctt ttcccttgcc atttctttct ttttttccct tcccggag 228

<210> 862
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 862

cggagatcca gcggatgtgc ccgttcaggt gaaccgcgtc cgcaacggcg agctgtaccg 60

ctacatctgc gacaccaagg gcgccttcgt gcagcctgct ttctacgagg ctttcgggct 120

gacggtggtt gaggccatga cctgcggcct gcccacgttt gccacagcct acggcggtcc 180

ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggcgacaa 240

ggcgtcg 247

<210> 863
<211> 219
<212> nucleic acid
<213> Zea mays

<400> 863

actcactgta ccattgccca tgcgcttgag aaaactaagt accctaactc cgacctctac 60

tggaagaagt ttgaggatca ctaccacttc tcgtgccagt tcaccactga cttgattgca 120

atgaaccatg ccgacttcat catcaccagt accttccaag agatcgccgg aaacaaggac 180

accgtcggcc agtacgagtc acacatggcg ttcacaatg 219

<210> 864
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 864

cttggatacc ctgacactgg cggtcaggtt gtgtacattc tggatcaggt ccgtgctttg 60

gagaatgaga tgcttctgag gattaagcag caaggccttg atatcactcc gaagatcctc 120

attgttacca ggctgttgcc tgatgctgct gggactacgt gcggtcagcg gctggagaag 180

gtcattggta ctgagcacac agacatcatt cgcgttccct tcagaaatg 229

<210> 865
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 865

cggaccgtgg ctcaacaggc acctgtcatc aaagctcttc catgacaagg agagcatgta 60

ccccttgctc gacttccttc gcgcccacaa ctacaagggg atgaccatga tgttgaacga 120

cagaatccgc agtctcagtg ctctgcaagg tgcgctgagg aaggctgagg agcacctgtc 180

caccctacaa gctgataccc catactctga atttcaccac aggttccagg aacttggtc 239

<210> 866
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 866

tgctcgagcc gaatcggctc gagcttcaga aatgagaatg gcatcctccg caagtggatc 60

tctacttttg atgtctggcc atagctggag acatacactg aggatgtttc cagtgaaata 120

atgaaagata tgcaggccaa gcctgacctt atcattggca actacagcga tggcaacccg 180

gtcgccactc tgctcgcgca caagttggga gtcactcagt gtaccatcgc tcatgccttg 240

gagaaaacca aataccccca 259

<210> 867
<211> 222
<212> nucleic acid
<213> Zea mays

<400> 867

ccaggccgga gaaccatcgc ctgcatttcg atctgtttca ccgcaattcg cattgttagt 60

cgtgtattgg agttatgtgt acttggtttc caagaacttt ggttccttct cgtttttttt 120

ccttgtttga gagtttttgg gcagcgctgg cctggttcct agtatggtgg gaattggctg 180

cacctttgc ttcgaataaa aatgcctgct cgttcacctg tc 222

<210> 868
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 868

ctgggacaag atctcacagg gcggcctgca gagaatctat gagaagtaca cctggaagct 60

ctactccgag aggctgatga ccctgaccgg cgtgtacggg ttctggaagt acgtgagcaa 120

cctggagagg cgcgagaccc gccgctacat cgagatgttc tacgccctga agtaccgtag 180

cctggcaagc caggttccgc tgtccttcga ttagtacggg 220

<210> 869
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 869

cagacgctgg gcgaccgcgt gaagaacatg acaggcctgg tggagatgta cggcaagaac 60

gcgcgcctga gggagctggc gaacctcgtg atcgtcgccg gtgaccacgg caaggagtcc 120

aaggacaggg aggagcaggc ggagttcaag aagatgtaca gcctcatcga cgagtacaag 180

ttgaagggcc atatccggtg gatctcggcg cagatgaacc gcgtccgcaa cgggg 235

<210> 870
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 870

tgagaatggc atcctccgca agtggatctc tcgttttgtc gtctggccat acctggagac 60

atacactgag gatgtttcca gtgaaataat gaaagaaatg caggccaagc ctgaccttat 120

cattggcaac tacagcgatg gcaacctagt cgccactctg ctcgcacaca agttgggagt 180

cactcattgt accatcgctc atgccttgga gaaaaccaaa taccccaact cggacatcta 240

cttggacaag tcgacagcc 259

<210> 871
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 871

gttcaccact gacttgattg caatgaacca tgccgacttc atcatcacca gtaccttcca 60

agagatcgcc ggaaacaagg acaccgtcgg ccagtacgag tcacacatgg cgttcacaat 120

gcctggcctg taccgcgttg tcaacggcat tgatgtgttc gaccccaggt tcaacatcgt 180

gtctcctggc gcggacctgt ccacctactt cccgtaaacc gattcgcaca agaggctgac 240

ctccc 245

<210> 872
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 872

aggagagttt gtaccccttg ctgaattcct caaggctcat aactacaagg gcacgacgat 60

gttgttgaat gacagaatcc aaagccttcg tggtctccaa tcatccctga gaaaggcaga 120

ggagtatcta ctgagtgttc ctcaagacac tctctactcg gagttcaacc ataggttcca 180

agagcttggc ttggagaagg gttggggtga catgcgaacg tgtactcgac acactccatt 240

gcttctcgac cttctggagg ccctgatccg ccaattg 277

<210> 873
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 873

ctcgagccgc tcgagccggg cacgacgatg atgttgaatg acagaatcca aagccttcgt 60

ggtctccact catccctgag aaaggcagag gagtatctac tgagtgttcc tcaagacact 120

ccctactcgg agttcaacca taggttccaa gagcttggtt tggagaaggg ttggggtgac 180

actgcgaacg tgtactcgac acactccact tgcttcttga ccttcttgag gcccctgatc 240

ctgccaa 247

<210> 874
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 874

gggcgacaag gcgtcggccc tgctcgtgga cttcttcgac aagtgccaag aggagcgatg 60

ccactggagc aagatctccc agggcgggct ccagcgtatc gaggagaagt acacctggaa 120

gctgtactcg gagaggctga tgaccctcac cggcgtgtac gggttctgga agtacgtgtc 180

caacctggag aggcgcgaga cccggcggta cctggagatg ctgtacgcgc t 231

<210> 875
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 875

cggacgcgtg ggcggacgcg tgggcggacg cgtgggttgg aactatacca atgatgttca 60

acgttgttat actgtctcct catggctact tcgcacagtc caatgtgctt ggataccctg 120

acactggcgg tcaggttgtg tacattctgg atcaggtccg tgctttggag aatgagatgc 180

ttctgaggat taagcagcaa ggccttgata tcactccgaa gatcctcatt gttaccaggc 240

tgttgcctga tgctgctggg actacg 266

<210> 876
<211> 169
<212> nucleic acid
<213> Zea mays

<400> 876

cgctcaagct aatgtcttgg gttaccctga caccggaggc caggttgtct acatcttgga 60

tcaagtgcgc gctatggaga acgaaatgct gctgaggatc aagcagtgtg gtcctgacat 120

cacgccgaag atccctaatg tccacaggtt gctccctgat gcaactggc 169

<210> 877
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 877

aaggacaggg aggagcaggc ggagttcaag aagatgtaca gcctcatcga cgagtacaag 60

ttgaagggcc atatccggtg gatctcggcg cagatgaacc gcgtccgcaa cggggagctg 120

taccgctaca tttgcgatac gaagggcgca ttcgtgcagc ctgcgttcta cgaagcgttc 180

ggcctgactg tgatcgagtc catgacgtgc ggtctgccaa cgatcgcgac ctgccatggt 240

ggccctgctg agatcatcgt ggacggggta tctggcctgc acattgaccc ttaccacagc 300

gacaag 306

<210> 878
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 878

ttcggcacga gacaagatct cacagggcgg cctgcagaga atctatgaga agtacacctg 60

gaagctctac tccgagaggc tgatgaccct gaccggcgtg tacgggttct ggaagtacgt 120

gagcaacctg gagaggcgcg agacccgccg ctacatcgag atgttctacg ccctgaagta 180

ccgtagcctg gcaagccagg ttccgctgtc cttcgattag tacggggaaa gaagaagaag 240

aaga 244

<210> 879
<211> 214
<212> nucleic acid
<213> Zea mays

<400> 879

acggaaaccg acaagagact cactgccttc catcctgaaa tcgaggagct catctacagc 60

gacgtcgaga actccgagca caagttcgtg ctgaaggaca agaagaagcc gatcatcttc 120

tcgatggcgc gtctcgaccg cgtgaagaac atgacaggcc tggtcgagat gtacggcaag 180

aacgcgcgcc tgagggagct ggcgaacctc gtga 214

<210> 880
<211> 213
<212> nucleic acid
<213> Zea mays

<400> 880

gagattgctg gagagcttca ggccaatcct gacctgatca tcggaaacta cagtgacgga 60

aaccttgttg cgtgtttgct cgcccacaag atgggtgtta ctcactgtac cattgcccat 120

gcgcttgaga aaactaagta ccctaactcc gacctctact ggaagaagtt tgaggatcac 180

taccacttct cgtgccagtt caccactgac ttg 213

<210> 881
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 881

ctcatgcctt ggagaaaacc aaatacccca actcggacat atacttggac aaattcgaca 60

gccagtacca cttctcttgc cagttcacag ctgaccttat tgccatgaac cacaccgttt 120

tcatcatcac cagcacattc cttgtttatc tcgggaagca aggacaccgt ggggcagtac 180

gagtcccaca tcgcgttcac tcttcctggg ctctaccgtg tcgtccatgg catgatgtt 239

<210> 882
<211> 215
<212> nucleic acid
<213> Zea mays

<400> 882

acaagagact cactgccttc catcctgaaa tcgaggagct catctacagc gacgtcgaga 60

actccgagca caagttcgtg ctgaaggaca agaagaagcc gatcatcttc tcgatggcgc 120

gtctcgaccg cgtgaagaac atgacaggcc tggtcgagat gtacggcaag aacgcgcgcc 180

tgagggagct ggcgaacctc gtgatcgttg ccggt 215

<210> 883
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 883

gctgcttgac cttcttgagg cccctgatcc tgccaacttg gagaagttcc ttggaactat 60

accaatgatg ttcaatgttg tgatcctttc tcctcatggc tacttcgctc agtccaatgt 120

gcttggatac cctgacactg gcggtcaggt tgtgtacatt ctggatcaag tccgtgcttt 180

ggagaatgag atgcttctga ggattaagca gcaaggcctt gatatcactc cgaagatcct 240

cattgttacc agg 253

<210> 884
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 884

cttcccgtac accgagtcgc acaagaggct gacctccctt cacccggaga ttgaggagct 60

cctgtacagc caaaccgaga acacggagca caagttcgtt ctgaacgaca ggaacaagcc 120

aatcattctt gtttgctacc tccaaatcgg gggcgcttgt tctcgaccgt gtgaagaact 180

tgactgggct ggtggagctg tacggccgga acaagcggct gcaggagctg gtgaacctcg 240

tggtcgtctg cggcgaccat ggcaa 265

<210> 885
<211> 213
<212> nucleic acid
<213> Zea mays

<400> 885

ctgaatttca ccacaggttc caggaacttg gtctggagaa gggttggggt gattgcgcta 60

agcgtgcaca ggagactatc cacctcctct tgggactcct ggaagcccca gaatcgttca 120

acctggagaa gttccctgga acgattccca tggtgttcaa tggcggtaac ctctcccctc 180

atgggtactt cgctcaagct aatgtcctgg ggt 213

<210> 886
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 886

ctcgtgatcg ttgccggtga ccacggcaag gagtccaagg acatggagga gcaggcggag 60

ttcaagaaga tgtacagcct catcgacgcg tacaagttga agggccatat ccggtggatc 120

tcggcgcaga tgaaccgcgt ccgcaacggg gagctgtacc gctacatttg cgatacgaag 180

ggcgcattcg tgcagcctgc gttctacgaa gcgttcggcc tgactgtgat 230

<210> 887
<211> 227
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (21)
<223>

<400> 887

gacaagtgcc agccggacga ngccactgga gcaagatctc ccagggcggg ctccagcgta 60

tcgaggagaa gtacacctgg aagctgtact cggagaggct gatgaccctc accggcgtgt 120

acgggttctg gaagtacgtg tccaacctgg agaggcgcga gacccggcgg tacctggaga 180

tgctgtacgc gctcaagtac cgcaccatgg cgagcaccgt gccgctg 227

<210> 888
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 888

cccacgcgtc cgcttggaca aattcgacag ccagtaccac ttctcttgcc agttcacagc 60

tgaccttatt gccatgaacc acaccgattt catcatcacc agcacattcc aagaaatcgc 120

gggaagcaag gacaccgtgg ggcagtacga gtcccacatc gcgttcactc ttcctgggct 180

ctaccgtgtc gtccatggca tcgatgtttt cgatcccaag ttcaacattg t 231

<210> 889
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 889

ctcgatggcg cgtctcgaga agatgatcgg cttcttcttg atggcgcgtc tcgaccgcgt 60

gaagaacatg acaggcctgg tggagatgta cggcaagaac gcgcgcctga gggagctggc 120

gaacctcgtg atcgtcgccg gtgaccacgg caaggagtcc aaggacaggg aggagcaggc 180

ggagttcaag aagatgtaca gcctcatcga cgagtacaag ttgaagggcc atatccggtg 240

gatctcgg 248

<210> 890
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 890

gaatcgttcg caagtggatc tcgcgatttg aagtctggcc gtacctggag acttacactg 60

atgacgtggc gcatgagatt gctggagagc ttcaggccaa tcctgacctg atcattggaa 120

actacagtga cggaaacctt gttgcgtgtt tgctcgccca caagatgggt gttactcact 180

gtaccattgc ccatgcgctt gagaaaacta agtaccctaa ctccgac 227

<210> 891
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 891

gttctagatc gcgagcagcc gccctttttt tttttttttt ttttcaggaa aagggctcca 60

aggccactac gattattatt caaggagcaa catcccatcc aggaaacaaa gggagcacca 120

cacccgactg cacacacacc accaccacca ccgttccctc tcaaccgacg caacgcaaac 180

tactaacagt ccatcagact actaaaagcg acacccggat caatgatgga acaagacctt 240

gacaaggtag gtaaatttaa ctcttgaagc aaagagcagc aacgaacgcc cgccg 295

<210> 892
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 892

ttcggcacga gacaagatct cacagggcgg cctgcagaga atctatgaga agtacacctg 60

gaagctctac tccgagaggc tgatgaccct gaccggcgtg tacgggttct ggaagtacgt 120

gagcaacctg gagaggcgcg agacccgccg ctacatcgag atgttctacg ccctgaagta 180

ccgtagcctg gcaagccagg ttccgctgtc cttcgattag tacgg 225

<210> 893
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 893

gggagacaat gttgaacttg ggatcgaaaa ccgacaagag actcactggc ttcgatcctg 60

aaatcgagga gctcatcaac agcgacgtcg agaactccga gcacaagttc gtgctgaagg 120

acaagaagaa gccgatcatc ttctcgatgg cgcgtctcga ccgcgtgaag aacatgacag 180

gcctggtgga gatgtacggc aagaacgcgc gcctgaggga gctggcgaac ctcgtgatcg 240

tcgcc 245

<210> 894
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 894

acggaaaccg acaagagact cactgccttc catcctgaaa tcgaggagct catcaacagc 60

gacgtcgaga actccgagca caagttcgtg ctgaaggaca agaagaagcc gatcatcttc 120

tcgatggcgc gtctcgaccg cggaagaaca tgacaggcct ggtggagatg tacggcaaga 180

acgcgcgcct gagggagctg gcgaacctcg taatcgtcgc g 221

<210> 895
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 895

aatttaccta ccttgtcaag gtcttgttcc atcattgatc cgggtgtcgc ttttttagta 60

gtctgatgga ctgttagtag tttgcgttgc gtcggttgag agggaacgtt ggtggtggtg 120

gtgtgtgtgc agtcaggcgt ggtgctccct ttgtttcctg gatgggatgt tgctccttga 180

ataataatcg tagtggcctt ggagcccttt tcctgaaaaa aaacaaaaag agagttggag 240

atgagga 247

<210> 896
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 896

gaggattaag cagcaaggcc ttgatacact ccgaagatcc tcattgttac caggctgttg 60

cctgatgctg ctgggactac gtgcggtcag cggctggaga aggtcattgg tactgagcac 120

acagacatca ttcgcgttcc gttcagaaat gagaatggca tcctccgcaa gtggatctct 180

cgttttgatg tctggccata cctggagaca tacactgagg atgtttccag tgaaataatg 240

aaagaactgc aggc 254

<210> 897
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 897

cccacgcgtc cgcccacgcg tccgcttccc gtacaccgag tcgcacaaga ggctgacctc 60

ccttcacccg gagattgagg agctcctgta cagccaaacc gagaacacgg agcacaagtt 120

cgttctgaac gacaggaaca agccaatcat cttctccatg gctcgtctcg accgtgtgaa 180

gaacttgact gggctggtgg agctgtacgg ccggaacaag cggctgcag 229

<210> 898
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 898

cggacgctgg tgtagcgcta agcgtgcaca ggagactatc cacctcctct tggacctcct 60

ggaggcccca ccatccgtcc accctggaga agttccttgg aacgatcccc atggtgttca 120

atgtcgttat cctctcccct catggttact tcgctcaagc taatgtcttg ggttaccctg 180

acaccggagg ccaggttgtc tacatcttgg atcaagtgcg c 221

<210> 899
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 899

cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc cttcgtgcag 60

cctgctttct acgaggcttt cgggctgacg gtggttgagg ccatgacctg cggcctgccc 120

acgtttgcca cagcctacgg cggtccggcc gagatcatcg tgcacggcgt gtctggctac 180

cacatcgacc cttaccaggg cgacaaggcg tcggccctgc tcgt 224

<210> 900
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 900

acggaaaccg acaagagact cactgccttc catcctgaaa tcgaggagct catcaacagc 60

gacgtcgaga actccgagca caagttcgtg ctgaaggaca agaagaagcc gatcatcttc 120

tcgatggcgc gtctcgaccg cggaagaaca tgacaggcct ggtggagatg tacggcaaga 180

acgcgcgcct gagggagctg gcgaacctcg tgatcgtcgc 220

<210> 901
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 901

agacgagtcc cacattcctg ggctctaccg tgtcgtccat ggcatcgatg ttttcgatcc 60

caagttcaac attgtctccc ctggagcaga catgagtgtt tactacccgt atacggaaac 120

cgacaagaga ctcactgcct tccatcctga aatcgaggag ctcatctaca gcgacgtcga 180

gaactccgag caagtcgtga aggacaagaa gaagccgatc atcttctcga tggcgcgtct 240

cgaccgcgtg ag 252

<210> 902
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 902

cccacgcgtc cgcccacgcg tcagccacgc gtccgcccac gcgtccgcat cgtgtctcct 60

ggcgcggacc tgtccatcta cttcccgtac accgagtcgc acaagaggct gacctccctt 120

cacccggaga ttgaggagct cctgtacagc caaaccgaga acacggagca caagttcgtt 180

ctgaacgaca ggaacaagcc aatcatcttc tccatggctc gtctcgaccg tgtgaagaac 240

ttgactgggc tgg 253

<210> 903
<211> 228
<212> nucleic acid
<213> Zea mays

<400> 903

aagatactca ctgccttcca tcctgaaatc gaggagctcg tctacagcga cgtcgagaac 60

tccgagcaca agttcgtgct gaaagacaag aagaagccga tcatcttctc gatggcgcgt 120

ctcgaccgcg tgaagaacat gacaggcctt gtcgagatgt acggcaagaa cgcgcgcctg 180

agggagctgg cgaacctcgt gatcgttgcc ggtgaccacg gcaaggag 228

<210> 904
<211> 197
<212> nucleic acid
<213> Zea mays

<400> 904

cccgtacacc gagtcgcaca agaggctgac ctcccttcac ccggagattg aggagctcct 60

gtacagccaa accgagaaca cggagcacaa gttcgttctg aacgacagga acaagccaat 120

catcttctcc atggctcgtc tcgaccgtgt gaagaacttg actgggctgg tggagctgta 180

cggccggaac aagcggc 197

<210> 905
<211> 310
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (109)
<223>

<400> 905

cgctcaagta ccgcaccatg gcgagcaccg tgccgctggc cgtggaggga gagccctcca 60

gcaagtgatg cgcgacggcg gccacagacc tgatcgatcg atgagcgana gggagcactc 120

ggagtgtcga gtcttttccc ttgccatttc tttcttttt tcccttcccg gaggcgaaaa 180

aaaagagtct gcttttgcta ggctgcgggc gttcgttgct gctctttgct tcaagagtta 240

aatttaccta ccttgtcaag gtcttgttcc atcattgatc cgggtgtcgc ttttttagta 300

gtctgatgga 310

<210> 906
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 906

gaacagaaaa cggaatcgtt cgcaagtgga tctcgcgatt tgaagtctgg ccgtacctgg 60

agacttacac tgatgacgtg gcgcatgaga ttgctggaga gcttcaggcc aatcctgacc 120

tgatcatcgg aaactacagt gacggaaacc ttgttgcgtg tttgctcgcc cacaagatgg 180

gtgttactca ctgtaaccat tgccatgcgc ttgagaaaac taagtaccct aactccg 237

<210> 907
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 907

cgacaaggcc tgcagagaat ctatgagaag tacacctgga agctctactc cgagaggctg 60

atgaccctga ccggcgtgta cgggttctgg aagtacgtga gcaacctgga gaggcgcgag 120

acccgccgct acatcgagat gttctacgcc ctgaagtacc gtagcctggc aagccaggtt 180

ccgctgtcct tcgattagta cggggaaaga agaagaagaa gaagcccagg ccggagaacc 240

atcgcctgca tttcgatctg tttcac 266

<210> 908
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 908

caaagtcctt ggcaccgagc actgccatat ccttcgcgtg ccattcacta cagtgaacgg 60

aatcgttcgc tagtggatct cgcgatttga agtctggccg tacctggaga cttacactga 120

cgacgtggcg catgagatta ctggagagcg acaggccaat cctgacctga ccatcggaaa 180

ctacagtgac ggaaaccttg ttgcgtgttt gctcgacgac aagatgggcg ttactcactg 240

tacaattgcc ca 252

<210> 909
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 909

gcaccatggc gagcaccgtg ccgctggccg tggagggaga gccctccagc aagtgatgcg 60

cgacggcggc cacagacctg atcgatcgat gagcgagagg gagcactcgg agtgtcgtgt 120

cttttccctt gccatttctt tcttttttc ccttcccgga agcgaaaaaa agagtctgct 180

tttgtaagcg gcgggcgttc gttgctgctc tttgcttcaa gagtttaaat ttacctacct 240

tgtcaaaggt ct 252

<210> 910
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 910

ctcgagcgaa tcggctcacg gctcgagtgg ctacttcgct cagtccaatg tgattggata 60

ccctgacact agcggtcagg atgtgtacat tctggatcag gtccgtgctt tggagaatga 120

gatgcttctg aggattaagc agcaaggcct tgatatcact ccgaagatcc tcattgttac 180

caggctgttg cctgatgctg ctgggactac gtgcggtcag cggctggaga aggtcatggt 240

<210> 911
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 911

cggacgcgtg gcggacgcgt gggcggacgc gtgggcaagt tcgtgctgaa ggacaagaag 60

aagccgatac atcttctcga tggcgcgtct cgaccgcgtg aagaacatga caggcctggt 120

ggagatgtac ggcaagaacg cgcgcctgag ggagctggcg aacctcgtga tcgtcgccgg 180

tgaccacggc aaggagtcca aggacaggga ggagcaggcg gagttcaaga agatgtacag 240

cctcatcgac gagtacaagt tgaa 264

<210> 912
<211> 216
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (157),(179),(190),(193),(211),(215)
<223> unsure at all n locations

<400> 912

gcgttgtcca cggcattgat gtgttcgacc ccaagttcaa catcgtgtct cctggcgcgg 60

acctgtccat ctacttcccg tacaccgagt cgcacaagag gctgacctcc cttcacccgg 120

agattgagga gctcctgtac agccaaaccg agaacangga gcacaagttc gttctgaang 180

acaggaacan gcnatcatct tctcgatggc ncgtng 216

<210> 913
<211> 215
<212> nucleic acid

<213> Zea mays

<400> 913

acagctgcaa aggtaagcac taggatgctg ctcttatttc aggaaaaggg ctccaaggcc 60

actacgatta ttattcaagg agcaacatcc catccaggat acaaagggag caccacgcct 120

gactgcacac acaccagcac caccaacgtt ccctctcaac cgacgcaacg caaactacta 180

acagtccatc agactactaa aaaagcgaca cccgg 215

<210> 914
<211> 202
<212> nucleic acid
<213> Zea mays

<400> 914

agcgatggca acctagtcgc cactctgctc gcgcacaagt tgggagtcac tcagtgtacc 60

atcgctcatg ccttggagaa aaccaaatac cccaactcgg acatatactt ggacaaattc 120

gacagccagt accacttctc ttgccagttc acagctgact tattgccatg aaccacaccg 180

atttcatcat caccagcaca tt 202

<210> 915
<211> 197
<212> nucleic acid
<213> Zea mays

<400> 915

ccttccaaga gatcgccgga aacaaggaca ccgtcggcca gtacgagtca cacatggcgt 60

tcacaatgcc tggcctgtac cgcgttgtcc acggcattga tgtgttcgac cccaagttca 120

acatcgtgtc tcctggcgcg gacctgtcca tctagttccg gtacacggag tcgcacaaga 180

ggctgacttc ctttcac 197

<210> 916
<211> 234
<212> nucleic acid
<213> Zea mays

<400> 916

cccacgcgtc cggcgcggac ctgtccatct acttcccgta caccgagtcg cacaagaggc 60

tgacctccct tcacccggag attgaggagc tcctgtacag ccaaaccgag aacacggagc 120

acaagttcgt tctgaacgac aggaacaagc caatcatctt ctccatggct cgtctcgacc 180

gtgtgaagaa cttgactggg ctggtggagc tgtacggccg gaacaagcgg ctgc 234

<210> 917
<211> 252
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (3)
<223>

<400> 917

atncagcgct cgagccgctc gagcgctcac ttctcgatgg cgcgtctcga ccgcgtgaag 60

cccatgacag gactggacga gatgtacggc aagaacgcgc gcctgaggga gctggcgaac 120

ctcgtgatcg ttgccggtga ccacggcaag gagtccaagg acagggagga gcaggcggag 180

ttcaagaaga tgtacagcct catcgacgag tacaagttga agggccatat ccggtggatc 240

tcggcgcaga tg 252

<210> 918
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 918

gcgcgcctga gaggagctgg cgaacctcgt gatcgttgcc ggtgaccacg gcaaggagtc 60

caaggacatg gaggagcagg cggagttcaa gaagatgtac agcctcatcg acgagtacaa 120

gttgaagggc catatccggt ggatactcgg cgcagatgaa ccgcgtccgc atacgggagc 180

tgtaccgcta catttgcgat acgaagggcg cattcgtgca gcctgcgttc tacgaagcgt 240

tcggcctga 249

<210> 919
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 919

aggacaccgt ggggcagtac attccaactt cgggttcact cttcctgggg ctctaccgtg 60

tcgtccatgg catcgatggt ttcgatccca agttcaacat tgtctcccct ggagaagaca 120

tgagtgttta ctacccgtat agggaaacgg acaagagatt cactgccttc catcctgaaa 180

tcgaggtgct catctacagc gacgtcgaga actccgagca caagttcgtg ctgaaggaca 240

agaagaagcc gatcatcttc tcgtggcgcg tctcgac 277

<210> 920
<211> 190
<212> nucleic acid
<213> Zea mays

<400> 920

gatcgagtcc atgacgtgcg gtctgccaac gatcgcgacc tgccatggtg gccctgctga 60

gatcatcgtg gacggggtat ctggcctgca cattgaccct taccacagcg acaaggccgc 120

ggatatcctg gtcaacttct ttgacaaatg caaggcagat ccgagctact gggacaagat 180

ctcagagggc 190

<210> 921
<211> 218
<212> nucleic acid
<213> Zea mays

<400> 921

cccacgcgtc cgcccacgcg tccgcccacg cgtccgaaac caaatacccc aactcggaca 60

tctacttgga caagttcgac agccagtacc acttctcttg ccagttcaca gctgacctta 120

ttgccatgaa ccacactgat ttcatcatca ccagcacatt ccaagaaatc gcgggaagca 180

aggacaccgt ggggcagtac gagtcccaca tcgcgttc 218

<210> 922
<211> 180
<212> nucleic acid
<213> Zea mays

<400> 922

gtgtttacta cccgtatacg gaaaccgaca agagactcac tgccttccat cctgaaatcg 60

aggagctcat ctacagcgac gtcgagaact ccgagcacaa gttcgtgctg aaggacaaga 120

agaagccgat atcttctcga tggcgcgtct cgaccgcgtg aagaacatga caggcctggt 180

<210> 923
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 923

atcgagcgct cgagcgctcg aggctcgagt tctcgatgac gcgtctcgac cgcatgaaga 60

acatgacagg cctggatcag atgaccggca agaacgcgcg cctgagggag ctggcgaacc 120

tcgtgatcgt tgccggtgac cacggcaagg agtccaagga cagggaggag caggcggagt 180

tcaagaagat gtacagcctc atcgacgagt acaagttgaa gggccatatc cggtggatc 239

<210> 924
<211> 176
<212> nucleic acid
<213> Zea mays

<400> 924

cgggcgacaa ggcgtcggcc ctgctcgtgg acttcttcga caagtgccag gcggacccga 60

gccactggag caagatctcc cagggcgggc tccagcgtat cgaggagaag tacacctgga 120

agctctactc ggagaggctg atgaccctca ccggcgtgta cgggttctgg aagtac 176

<210> 925
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 925

ggcggcgggc gttcgttgct gctctttgct tcaagagtta aatttaccta ccttgtcaag 60

gtcttgttcc atcattgatc cgggtgtcgc ttttttagta gtctgatgga ctgttagtag 120

tttgcgttgc gtcggttgag agggaacgtt ggtggtggtg gtgtgtgtgc agtcaggcgt 180

ggtgctccct ttgtttcctg gatgggatgt tgctccttga 220

<210> 926
<211> 204
<212> nucleic acid
<213> Zea mays

<400> 926

atctccgccc agcgcaacgg cgagctgtac cgctacatct gcgacaccaa gggcgccttc 60

gtgcagcctg ctttctacga ggctttcggg ctgacggtgg ttgaggccat gacctgcggc 120

ctgcccacgt tcgccaccgc ctacggcggt ccggccgaga tcatcgtgca cggcgtgtct 180

ggctaccaca tatctccagg gcga 204

<210> 927
<211> 203
<212> nucleic acid
<213> Zea mays

<400> 927

cggacgcgtg gctgaatttc accacaggtt ccaggaactt ggtctggaga agggttggag 60

gtgattgcgc taagcgtgca caggagacta tccacctcct cttggacctc ctggaggccc 120

cagatccgtc caccctggag aagttccttg gaaggttccc cagggtgttc gatggcggaa 180

tcctctcccc tcgtggttac tgc 203

<210> 928
<211> 165
<212> nucleic acid
<213> Zea mays

<400> 928

ccgacctcta ctggaagaag tttgaggatc actaccactt ctcgtgccag ttcaccactg 60

acttgattgc aatgaaccat gccgacttca tcatcaccag taccttccaa gagatcgccg 120

gaaacaagga caccgtcggc cagtacgagt cacacatggc gttca 165

<210> 929
<211> 175
<212> nucleic acid
<213> Zea mays

<400> 929

ctggaagaag tttgaggatc actaccactt ctcgtgccag ttcaccactg acttgattgc 60

aatgaaccat gccgacttca tcatcaccag taccttccaa gagatcgccg gaaacaagga 120

caccgtcggc cagtacgagt cacacatggc gttcacaatg ctggcctgta cgggt 175

<210> 930
<211> 166
<212> nucleic acid
<213> Zea mays

<400> 930

gagctggcga acctcgtgat cgttgccggt gaccacggca aggagtccaa ggacagggag 60

gagcaggcgg agttcaagaa gatgtacagc ctcatcgacg agtacaagtt gaagggccat 120

atacggtgga tctcggcgca gatgaaccgc gtccgcaacg gggagt 166

<210> 931
<211> 167
<212> nucleic acid
<213> Zea mays

<400> 931

atcactctga agatcctcat tgttaccagg ctgttgcctg atgctgctgg gactacgtgc 60

ggtcagcggc tggagaaggt cattggtact gagcacacag acatcattcg cgttccgttc 120

agaaatgaga atggcatcct ccgcaagtgg atctctcgtt ttgatgt 167

<210> 932
<211> 161
<212> nucleic acid
<213> Zea mays

<400> 932

agctgacctt attgccatga accacactga tttcatcatc accagcacat tccaagaaat 60

cgcgggaagc aaggacaccg tggggcagta cgagtcccac atcgcgttca ctcttcctgg 120

gctctaccgt gtcgtccatg gcatcgatgt tttcgatccc a 161

<210> 933
<211> 177
<212> nucleic acid
<213> Zea mays

<400> 933

ctcgacggcg cgtctcgacc gcgtgaagaa catgacaggc ctggtcgaga tgtacggcaa 60

gaacgcgcgc ctgacggagc tggcgaacct cgtgatcgtt gccggtgacc acggcaagga 120

gtccaaggac atggaggagc aggcggagtt caagaagatg tacagcctca tcgacga 177

<210> 934
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 934

gtagcctggc aagccaggtt ccgctgtcct tcgattagta cggggaaaga agaagaagaa 60

gaagcccagg ccggagaacc atcgcctgca tttcgatctg tttcaccgca attcgcattg 120

ttagtcgtgt attggagtta tgtgtacttg gtttccaaga actttggttc cttctcgttt 180

tttttccttg tttgatcgct ttttggcagc gctggcctgg ttcctagtat ggtgggaatt 240

ggctgcacct tttgcttcga ataaaaatgc ctgctcgttc 280

<210> 935
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 935

aggagagttt gtaccccttg ctgaacttcc tcaaggctca taactacaag ggcacgacga 60

tgatgttgaa tgacagaatc caaagccttc gtggtctcca atcatccctg agaaaggcag 120

aggagtatct actgagtgtt cctcaagaca ctccctactc ggagttcaac cataggttcc 180

aagagcttgg tttggagaag ggttggggtg acactgccaa cgtgtactcg acacactcca 240

cttgcttctt agacttcttg aggcccctga tcctgccaac ttggga 286

<210> 936
<211> 164
<212> nucleic acid
<213> Zea mays

<400> 936

cccacgcgtc cgcccacgcg tccgggttct ggaagtacgt gtccaacctg gagaggcgcg 60

agacccggcg gtacctggag atgctgtacg cgctcaagta ccgcaccatg gcgagcaccg 120

tgccgctggc cgtggaggga gattcctcca gcaagtgatg cgtg 164

<210> 937
<211> 208
<212> nucleic acid
<213> Zea mays

<400> 937

cagacgcgtg gcccgtacac cgagtcgcac aagaggctga cctcccttca cccggagatt 60

gacaggtccg acgccaggag acacgatgtt gaacttgggg tcgaacacat caatgccgtg 120

gacaacgcgg tacaggccag gcattgtgaa cgccatgtgt gactcgtact ggccgacggt 180

gtccttgttt ccggcgatct cttggaag 208

<210> 938
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 938

cgagtcgcac aagaggctga cctcccttca cccggagatt gaggagctcc tgtacagcca 60

aaccgagaac acggagcaca agttcgttct gaacgacagg aacaagccaa tcatcttctc 120

catggctcgt ctcgaccgtg tgaagaactt gactggtctg gtggagctgt acggccggaa 180

caagcggctg caggagctgg tgaactcgtg gtcgtctgcg gcgacatgga acctccaaga 240

caggagagca gcgattcaga agtgttgact cacgacagta aactgaaggg actccgtgga 300

ctcg 304

<210> 939
<211> 184
<212> nucleic acid
<213> Zea mays

<400> 939

cgccgctaca tcgagatgtt ctacgccctg aagtaccgta gcctggcaag ccaggttccg 60

ctgtccttcg attagtacgg ggaaagaaga agaagaagaa gcccaggccg gagaaccatc 120

gcctgcattt cgatctgttt caccgcaatt cgcattgtta gtcgtgtatt ggagttatgt 180

gtac 184

<210> 940
<211> 176

<212> nucleic acid
<213> Zea mays

<400> 940

ctaccgtgtc gtccatggca tcgatgtttt cgatcccaag ttcaacattg tctcccctgg 60

agcagacatg agtgtttact acacgtatac ggagaccgac aagagactca ctgccttcca 120

tcctgagatc gaggagctca tctacagcga cgtcgagaac tccgagcaca agttcg 176

<210> 941
<211> 188
<212> nucleic acid
<213> Zea mays

<400> 941

gcaaggtaga ggagtatcta ctgagtgtgc ctcaagacac tctgtagttg gagttcaacc 60

ataggttcca agagcttggc ttggggatag ggttggggtg acactgtgaa cgtgtactcg 120

acacactcca cttgcttctc gactttacgg aggcccctta tcctgccaac ttggagaagt 180

tcctggga 188

<210> 942
<211> 142
<212> nucleic acid
<213> Zea mays

<400> 942

ctcattgtta ccaggctgtt gcctgatgct gctgggacta cgtgcggtca gcggctggag 60

aaggtcattg gtactgagca cacagacatc attcgcgttc cgttcagaaa tgagaatggc 120

atcctccgca agtggatctc tc 142

<210> 943
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 943

agactggcaa gccaggttcc gctgtccttc gttagtacgg ggaaagaaga agaagaagaa 60

gcccaggccg gagaaccatc gcctgcattt cgatctgttt caccgcaatt cgcattgtta 120

gtactgtatt ggagttatgt gtacttggtt tccaagaact ttggttcctt ctcgtttttt 180

ttccttgttt gatcgatttt gggcagcgct ggcctggttc ctagtatggt gggaa 235

<210> 944
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 944

agccttcgtg cagcctgctt tctacgaggc tttcgggctg acggtggttg aagccatgac 60

ctgcagcctg cccacgtttg ccacagccta cggcggtccg gccgagatca tcgtgcacgg 120

cgtgtctggg taccac 136

<210> 945
<211> 135
<212> nucleic acid
<213> Zea mays

<400> 945

tgcaatgaac catgccgact tcatcatcac cagtaccttc caagagatcg ccggaaacaa 60

ggacaccgtc ggccagtacg agtcacacat ggcgttcaca atgcctggcc tgtaccgcgt 120

tgtccacggc attga 135

<210> 946
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 946

gacttcttcg acaagtgcca ggcggagcga tgccactgga gcaagatctc ccaaggcggg 60

ctccagcgta tcgaggagaa gtacacctcg aaagtgtact cggagaggct gattacgctc 120

accggcgtgt atcggttctg gaagtacgtg tccaacctgg agaggcgcga tacccggcgg 180

tacctggaga tgctgtacgc gctcaagtac cgcaccatgg cgaccaccgt accgctgccg 240

tgga 244

<210> 947
<211> 158
<212> nucleic acid
<213> Zea mays

<400> 947

cccacgcgtc cgcggagagg ctgatgaccc tcaccggcgt gtacgggttc tggaagtacg 60

tgtccaacct ggagaggcgc gagactcggc ggtacctgga gatgctgtac gcgctcaagt 120

accgcaccat ggcgagcacc gtgccgctgg ccgtggag 158

<210> 948
<211> 181
<212> nucleic acid
<213> Zea mays

<400> 948

cgagcaccgt gccgctggcc gtggagggag agccctccag caagtgatgc gtgacggcgg 60

ccacagacct gatcgatcga tgagcgagag ggagcactcg gagtgtcgtg tcttttccct 120

tgccatttct ttctttcttc tttttccttc ccggaggcga aaaaaaaaga gtctgctttt 180

g 181

<210> 949
<211> 145
<212> nucleic acid
<213> Zea mays

<400> 949

cactcagtgt accatcgctc atgccttgga gagaaccaaa taccccaact cggacatata 60

cttggacaaa ttcgacagcc agtaccactt ctcttgccag ttcacagctg acctgattgc 120

catgaaccac accgatttca tcatg 145

<210> 950
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 950

catcctgaaa tcgaggagct catctacagc gacgtcgaga attccgagca caagttcgtg 60

ctgaaggaca agacgaagcc gatcatcttc tcgatggcgc gtctcgaccg cgtgaagaac 120

atgacaggcc tggtcgagat gtacggcaaa a 151

<210> 951
<211> 180
<212> nucleic acid
<213> Zea mays

<400> 951

cacacgcgtc cgcccacgcg tccgcccacg cgtccgatca tcaccagtac cttccaagag 60

atcgccggaa acaaggacac cgtcggccag tacgagtcac acatggcgtt cacaatgcct 120

gtcctgtacc gcgttgtcca cggcattgat gtgttcgacc cgagtttgaa catcgtgtct 180

<210> 952
<211> 116
<212> nucleic acid
<213> Zea mays

<400> 952

agaacacgga gcacaagttc gttctgaacg acaggaacaa gccaatcatc ttctccatgg 60

ctcgtctcga ccgtgtgaag aacttgactg ggctggtgga gctgtacggc cggaaa 116

<210> 953
<211> 118
<212> nucleic acid
<213> Zea mays

<400> 953

cgttgttatc ctgtctcctc atggctactt cgcccagtcc aatgtgcttg gataccctga 60

cactggcggt caggttgtgt acattctgga tcaggtccgt gctttggaga atgagatg 118

<210> 954
<211> 113
<212> nucleic acid
<213> Zea mays

<400> 954

ggccttgata tcactccgaa gatcctcatt gttaccaggc tgttgcctga tgctgctggg 60

actacgtgcg gtcagcggct ggagaaggtc attggtactg agcacacaga cat 113

<210> 955
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 955

tcgagcgtgt ccaacctgga gaggcgcgag acgcggcggt acctggagat gctgtacgcg 60

ctcaagtacc gcaccatggc gagcaccgtg ccgctagtcg tggagggaga gccctaccag 120

caagtgatgc gtgcgg 136

<210> 956
<211> 124
<212> nucleic acid
<213> Zea mays

<400> 956

cttctcgtgc cagttcacca ctgacttgat tgcaatgaac catgccgact tcatcatcac 60

cagtaccttc caagagatgg ccggaaacaa ggacaccgtc ggccagtacg agtcacacat 120

ggcg 124

<210> 957
<211> 106
<212> nucleic acid
<213> Zea mays

<400> 957

agaagaagcc gatcatcttc tcgatggcgc gtctcgaccg cgtgaagaac atgacaggcc 60

tggtcgagat gtacggcaag aacgcgcgcc tgagggagct ggcgaa 106

<210> 958
<211> 115
<212> nucleic acid
<213> Zea mays

<400> 958

cttgggttac ctgacaccgg aggccaggtt gtctacatct tggatcaagt gcgcgctatg 60

gagaacgaaa tgctgctgag gatcaagcag tgtggtcctg acatcacgcc gaaga 115

<210> 959
<211> 138
<212> nucleic acid
<213> Zea mays

<400> 959

cggacgcgtg ggcagacaga gagagagaga gatgagggtg gtggtgtgtg tgcagtcggg 60

tgtggtgctc cctttgtttc ctggatggga tgttgctcct tgaataataa tcgtagtggc 120

cttggagccc ttttcctg 138

<210> 960
<211> 122
<212> nucleic acid
<213> Zea mays

<400> 960

ctccagcgta tcgaggagaa gtacacctgg aagctctact cggagaggct gatgaccctc 60

accggcgtgt acgggttctg gaagtacgtg tccaacctgt agaggcgcga tacccggcgg 120

ta 122

<210> 961
<211> 130
<212> nucleic acid
<213> Zea mays

<400> 961

cgagacgcga tgggcaaagc tcttccatca caaggagagc atgtacccct tgctcaactt 60

ccttcgcgcc cacaactaca aggggatgac catgatgttg aacgacaaca tccgcagtct 120

cagtgctctg 130

<210> 962
<211> 120
<212> nucleic acid
<213> Zea mays

<400> 962

ctccgagcac aagttcgtgc tgaaggacaa gaagaagccg atcatcttct cgatggcgcg 60

tctcgaccgg tgaagaacat gacaggcctg gtggagatgt acggcaagaa cgcgcgcctg 120

<210> 963
<211> 101
<212> nucleic acid
<213> Zea mays

<400> 963

ataccaatga tgttcaatgt tgttatcctt tctcctcatg gctacttcgc tcagtccaat 60

gtgcttggat accctgacac tggcggtcag gttgtgtaca t 101

<210> 964
<211> 101
<212> nucleic acid
<213> Zea mays

<400> 964

gttctggaag tacgtgagca acctggagag gcgcgagacc cgccgctaca tcgagatgtt 60

ctacgccctg aagtaccgta gcctggcaag ccaggttccg c 101

<210> 965
<211> 93
<212> nucleic acid
<213> Zea mays

<400> 965

gcaggcggag ttcaagaaga tgtacagcct catcgacgag tacaagttga agggccatat 60

ccggtggatc tcggcgcaga tgaaccgcgt ccg 93

<210> 966
<211> 99
<212> nucleic acid
<213> Zea mays

<400> 966

cggcaactac agcgatggca acctagtcgc cactctgctc gcgcacaagt tgggagtcac 60

tcagtgtacc atcgctcatg ccttggagaa aaccaaata 99

<210> 967
<211> 84
<212> nucleic acid
<213> Zea mays

<400> 967

tgctccttga ataataatcg tagtggcctt ggagcccttt tcctgaaata agagcagcat 60

cctagtgctt acctttacag ctgt 84

<210> 968
<211> 85
<212> nucleic acid
<213> Zea mays

<400> 968

attcgacagc cagtaccact tctcttgcca gtgcacagct gacctgattg ccatgaacca 60

caccgatttc atcatcacca gcaca 85

<210> 969
<211> 97
<212> nucleic acid
<213> Zea mays

<400> 969

gcgacgtcga gaactccgag cacaagttcg tgctgaagga caagaagaag ccgatcatct 60

tctcgatggc gcgtctcgac cgcgtgaaga acatgac 97

<210> 970
<211> 102
<212> nucleic acid
<213> Zea mays

<400> 970

cagtaccgtg gagccagagt cgcacaaatg gctgacctcc cttacaccgg agattgatga 60

gctcctgtac agctaaaccg agaacacgga gcacaagttc gt 102

<210> 971
<211> 89
<212> nucleic acid
<213> Zea mays

<400> 971

cggctcgagc ttggacaaat tcgacagcca gtaccacttc tcttgccagt tcacagctga 60

ccttattgcc atgaaccaca ccgatttca 89

<210> 972
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 972

ctgcttgctc cctgttgacc attgggtatt ctgaaccatc gagccatggc tgccaagctg 60

actcgcctcc acagtcttcg cgaacgcctt ggtgccacct tctcctccca tcccaatgaa 120

ctgatagcac tcttttccag gtatgttcac cagggcaagg gaatgcttca gcgccatcag 180

ctgcttgcgg agtttgatgc cctgtttgat agtgacaagg agaagtatgc accctttgaa 240

gacattcttc gtgctgctca ggaagcaatt gtgctccccc catgggttgc acttgct 297

<210> 973
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 973

tggactgctt gctccctgtt gaccattggg tattctgaac catcgagcca tggctgccaa 60

gctgactcgc ctccacagtc ttcgcgaacg ccttggtgcc accttctcct cccatcccaa 120

tgaactgata gcactctttt ccaggtatgt tcaccagggc aagggaatgc ttcagcgcca 180

tcagctgctt gcggagtttg atgccctgtt tgatagtgac aaggagaagt atgcaccctt 240

tgaagacatt cttcgtgctg ctcaggaagc aattgtgctc ccccccatggg ttgcacttgc 300

tatcaggcca aggcctgg 318

<210> 974
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 974

atcagctgct tgcggagttt gatgccctgt ttgctagtga caaggataag tatgcaccct 60

ttgaagacat tcttcgtgct gctcaggaag caattgtgct ccccccatgg gttgcacttg 120

ctatcaggcc aaggcctggt gtctgggatt acattcgggt gaatgtaagt gagctggctg 180

tggaggagct gagtgtttct gagtacttgg cattcaagga acagctggtg gatggacaat 240

ccaacagcaa ctttgtgctt gagcttgatt ttgagccctt caatgcct 288

<210> 975
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 975

ggactgcttg ctccctgttg accattgggt attctgaacc atcgagccat ggctgccaag 60

ctgactcgcc tccacagtct tcgcgaacgc cttggtgcca ccttctcctc ccatcccaat 120

gaactgatag cactcttttc caggtatgtt caccagggca agggaatgct tcagcgccat 180

cagctgcttg cggagtttga tgccctgttt gatagtgaca aggagaagta tgcacccttt 240

gaagacattc ttcgtgctgc tcaggaagca attgtgctcc ccccatgggt tgcacttgct 300

atc 303

<210> 976
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 976

aatgaactga tagcactctt ttccaggtat gttcaccagg gcaagggaat gcttcagcgc 60

catcagctgc ttgcggagtt tgatgccctg tttgatagtg acaaggagaa gtatgcaccc 120

tttgaagaca ttcttcgtgc tgctcaggaa gcaattgtgc tccccccatg ggttgcactt 180

gctatcaggc caaggcctgg tgtctgggat tacattcggg tgaatgtaag tgagctggct 240

gtggaggagc tgagtgtttc tgagtacttg gcat 274

<210> 977
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 977

gcttgctccc tgttgaccat tgggtattct gaaccatcga gccatggctg ccaagctgac 60

tcgcctccac agtcttcgcg aacgccttgg tgccaccttc tcctcccatc ccaatgaact 120

gatagcactc ttttccaggt atgttcacca gggcaaggga atgcttcagc gccatcagct 180

gcttgcggag tttgatgccc tgtttgatag tgacaaggag aagtatgcac cctttgaaga 240

cattcttcgt gctgctcagg aagcaattgt gctccccgca tgg 283

<210> 978
<211> 263

<212> nucleic acid
<213> Zea mays

<400> 978

gctccctgtt gaccattggg tattctgaac catcgagcca tggctgccaa gctgactcgc 60

ctccacagtc ttcgcgaacg ccttggtgcc accttctcct cccatcccaa tgaactgata 120

gcactctttt ccaggtatgt tcaccagggc aagggaatgc ttcagcgcca tcagctgctt 180

gcggagtttg atgccctgtt tgatagtgac aaggagaagt atgcaccctt tgaagacatt 240

cttcgtgctg ctcaggaagc aat 263

<210> 979
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 979

attggactgc ttgctccctg ttgaccattg ggtattctga accatcgagc catggctgcc 60

aagctgactc gcctccacag tcttcgcgaa cgccttggtg ccaccttctc ctcccatccc 120

aatgaactga tagcactctt ttccaggtat gttcaccagg gcaagggaat gcttcagcgc 180

catcagctgc ttgcggagtt tgatgccctg tttgatagtg acaaggagaa gtatgcaccc 240

tttgaagaca ttcttcgtgc tg 262

<210> 980
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 980

gctccctgtt gaccattggg tattctgaac catcgagcca tggctgccaa gctgactcgc 60

ctccacagtc ttcgcgaacg ccttggtgcc accttctcct cccatcccaa tgaactgata 120

gcactctttt ccaggtatgt tcaccagggc aagggaatgc ttcagcgcca tcagctgctt 180

gcggagtttg atgccctgtt tgatagtgac aaggagaagt atgcaccctt tgaagacatt 240

cttcgtgctg 250

<210> 981
<211> 274

<212> nucleic acid
<213> Zea mays

<400> 981

ttggactgct tgctccctgt tgaccattgg gtattctgaa ccatcgagcc atcgctgcca 60

agctgactcg cctccacagt cttcgcgaac gccttggtgc caccttctcc tcccatccca 120

atgaactgat agcactcttt tccaggtatg ttcaccaggg caagggcatg cttcagcgcc 180

atcagctgct tgcggagtct gatgccctgt ttgatagtga caaggagaag tatgcacccct 240

ttgaagacat tcttcgtgct gctcaggaag caat 274

<210> 982
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 982

ctgttgacca ttgggtattc tgaaccatcg agccatggct gccaagctga ctcgcctcca 60

cagtcttcgc gaacgccttg gtgccacctt ctcctcccat cccaatgaac tgatagcact 120

cttttccagg tatgttcacc agggcaaggg aatgcttcag cgccatcagc tgcttgcgga 180

gtttgatgcc ctgtttgata gtgacaagga gaagtatgca ccctttgaag aca 233

<210> 983
<211> 217
<212> nucleic acid
<213> Zea mays

<400> 983

ggactgcttg ctccctgttg accattgggt attctgaacc atcgagccat ggctgccaag 60

ctgactcgcc tccacagtct tcgcgaacgc cttggtgcca ccttctcctc ccatcccaat 120

gaactgatag cactcttttc caggtatgtt caccagggca agggaatgct tcagcgccat 180

cagctgcttg cggagtttga tgccctgttt gatagtg 217

<210> 984
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 984

actgcttgct ccctgttgac cattgggtat tctgaaccat cgagccaacg ctgccaagct 60

gactcgcctc cacagtcttc gcgaacacct tggtgccacc ttctcctccc atcccaatga 120

actgatagca ctcttttcca gttatgttca ccagggcaag ggaatgcttc agcgccatca 180

gctgcttgcg tgagtttgat gccctgtttg atagtgacaa ggagaagtat gcaccctttg 240

aagacatcct cgtgctgc 258

<210> 985
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 985

cccacgcgtc cggacccacg cgtccgagac attcttcgtg ctgctcagga agcgattgtg 60

ctccccccat gggttgcact tgctatcagg ccaaggcctg gtgtctggga ttacattcgg 120

gtgaatgtaa gtgagctggc tgtgggagag ctgagtgttt ctgagtactt ggcattcaag 180

gaacagctgg tggatggaca atccaacagc aactttgtgc ttgagcttga ttttgagccc 240

ttc 243

<210> 986
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 986

cattggactg cttgtccctg ttgaccattg ggtattctgt accatcgagc catagctgcc 60

acgctgactc gcctccacag tcttcgcgaa cgccttggtg ccaccttctc ctcccatccc 120

aatgaactga tagcactctt ttccaggtat gttcaccagg gcaagggact gcttcagcgc 180

catcagctgc ttgcggagtt tgatgccctg tttgcatatg acaggagcag tatgcaccct 240

ttgaaga 247

<210> 987
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 987

gctccctgtt gaccattggg tatctgaacc atcgagccat agctgccaag ctgactcgac 60

tccacagtca tcgcgaacgc cttggtgcca ccttctcctc ccatcccaat gaactgatag 120

cactcttttc caggtatgtt caccagggca tgggaatgct tcagcgccat cagctgcttg 180

cggagtttga tgccctgttt catagtgaca c 211

<210> 988
<211> 150
<212> nucleic acid
<213> Zea mays

<400> 988

attggactgc ttgctccctg ttgaccattg ggtattctga accatcgagc catggctgcc 60

aagctgactc gcctccacag tcttcgcgac cgtcttggtg ccaccttctc ctcccatccc 120

aatgaactga tagcactctt ttccaggtat 150

<210> 989
<211> 128
<212> nucleic acid
<213> Zea mays

<400> 989

ttggactgct tgctccctgt tgaccattgg gtattctgaa ccatcgagcc atggctgcca 60

agctgactcg cctccacagt cttcgcgaac gccttggtgc caccttctcc tcccatccca 120

atgaactg 128

<210> 990
<211> 125
<212> nucleic acid
<213> Zea mays

<400> 990

tccattggac tgcttgctcc ctgttgacca ttgggtattc tgaaccatcg agccatggct 60

gccaagctga ctcgcctcca cagtcttcgc gaacgccttg gtgccacctt ctcctcccat 120

cccaa 125

<210> 991
<211> 116

<212> nucleic acid
<213> Zea mays

<400> 991

attggactgc ttgctccctg ttgaccattg ggtattctga accatcgagc catggctgcc 60

aagctgactc gcctccacag tcttcgcgaa cggcttggtg ccaccttctc ctccca 116

<210> 992
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 992

cctccgttca ccccgtccat ttgatttgcg ttcactgcgt tgcgtttcct tggaggggat 60

tgttctctcc tctcctttgg attggaggtc cctccttctt ctcctctctc tctcagagga 120

aggcctgagg atccaggaag aggacagcaa tgggggaagg tgcaggtgac cgtgtcctga 180

gccgcctcca cagcgtcagg gagcgcattg gcgactcact ctctgccaca cccaatgagc 240

ttgtcgccgt ctttcacagg ctgaaaaacc tttggaaagg tatgctgcag cccaccag 298

<210> 993
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 993

cccgtccatt tgatttgcgt tcactgcgtt gcgtttcctt ggaggggatt gttctctcct 60

ctcctttgga ttggaggtcc ctccttcttc tcctctctct ctcagaggaa ggcctgagga 120

tccaggaaga ggacagcaat gggggaaggt gcaggtgacc gtgtcctgag ccgcctccac 180

agcgtcaggg agcgcattgg cgactcactc tctgcccacc ccaatgagct tgtcgccgtc 240

ttcaccaggc tgaaaaacct tggaaagggt atgctgcagc cccaccagat c 291

<210> 994
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 994

agttcatcga ttcagttctt gcctgaggat ccaggaagag gacagcaatg ggggaaggtg 60

caggtgaccg tgtcctgagc cgcctccaca gcgtcaggga gcgcattggc gactcactct 120

ctgcccaccc caatgagctt gtcgccgtct tcaccaggct gaaaaacctt ggaaagggta 180

tgctgcagcc ccaccagatc attgccgagt acaacaatgc gatccctgag gctgagcgcg 240

agaagctcaa ggatggtgct ttt 263

<210> 995
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 995

ctccgttcac cccgtccatt tgatttgcgt tcactgcgtt gcggggcctt ggaagggatt 60

gttctctcct ctcctttgga ttggaggtcc ctccttcttc tcctctctct ctcagaggaa 120

ggcctgagga tccaggaaga ggacagcaat gggggaaggt gcaggtgacc gtgtcctgag 180

ccgcctccac agcgtcaggg agcgcattgg cgactcactc tctgcccacc ccaatgagct 240

tgtcgccgtc ttcaccaggc tgaaaaa 267

<210> 996
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 996

cacacgcgtc cgcggacgcg tggccgttca ccccgtccat ttgatttgcg ttcactgcgt 60

tgcgtttcct tggacgggct tgttctctcc tctcctttgg attggaggtc cctccttctt 120

ctcctctctc tctcagagga aggcctgagg atccaggaag aggacagcaa tgggggaagg 180

tgcaggtgac cgtgtcctga gccgcctcca cagcgtcagg gagcgcattg gcgactcact 240

ctctgcccac cccaatgagc ttgtcg 266

<210> 997
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 997

ttgatttgcg ttcactgcgt tgcgtttcct tggaggggat tgttctctcc tctcctttgg 60

attggaggtc cctccttctt ctcctctctc tctcagagga aggcctgagg atccaggaag 120

aggacagcaa tgggggaagg tgcaggtgac cgtgtcctga gccgcctcca cagcgtcagg 180

gagcgcattg gcgactcact ctctgcccac cccaatgagc ttgtcgccgt cttcaccagg 240

ctgaaaaacc ttggaaatgg tatgctgcag ccccaccaga tcattgccga gtacaacaat 300

gcg 303

<210> 998
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 998

ccccgtccat ttgatttgcg ttcactgcgt tgcgtttcct tggaggggat tgttctctcc 60

tctcctttgg attggaggtc cctccttctt ctcctctctc tctcagagga aggcctgagg 120

atccaggaag aggacagcaa tgggggaagg tgcaggtgac cgtgtcctga gccgcctcca 180

cagcgtcagg gagcgcatgg gcgactcact ctctgcccac cccaatgag 229

<210> 999
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 999

ggggattgtt ctctcctctc ctttggattg gaggtccctc cttcttctcc tctctctctc 60

agaggaaggc ctgatgatcc aggaagacga cagcaatggg ggaaggtgca ggtgaccgtg 120

tcctgagccg cctccacagc gtcagggagc gcattggcga ctcactctct gcccacccca 180

atgagcttgt cgccgtcttc accaggctga aaaaccttgg aaagggtatg ctgcagcccc 240

accagatcat tgccgagtac aacaatgcga tccctgaggc tgagcgcgag aagctcaa 298

<210> 1000
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1000

attccacctc cgttcacccc gtccatttga tttgcgttca ctgcgttgcg tttccttgga 60

ggggattgtt ctctcctctc ctttggattg gaggtccctc cttcttctcc tctctctctc 120

agaggaaggc ctgaggattc aggaagagga cagcaatggg ggaaggtgca ggtgaccgtg 180

tcctgagccg cctccacagc gtcagggagc gcattggcga ttcatttttt gccaacccca 240

ttaaccttgt cgcggtt 257

<210> 1001
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1001

ccccgtccat ttgatttgcg ttcactgccc tgcgtttcct tggaggggac tgttctctcc 60

tctcctctgg cctccgaggt cgctccttct tctcctctct ctctcagagg aaggcctgac 120

gatgcaggaa gaggacagca atgggggaac gtgcaggtga ccgtgtcctg agccgcctcc 180

acagcgtcat ggagcgcatt ggcgactcac tctctgcgca ccccaatgag cttgtcgccg 240

tcttcaccag gcggaaaaag cttggaaagg gtatgctgca gccgcaccag at 292

<210> 1002
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 1002

cccacgcgtc cggcgttgcg tttccttgga ggggattgtt ctctcctctc ctttggattg 60

gaggtccctc cttcttctcc tctctctctc agaggaaggc ctgaggatcc aggaagagga 120

cagcaatggg ggaaggtgca ggtgaccgtg tcctgagccg cctccacagc gtcagggagc 180

gcattggcga ctcactctct gcccacccca atgagcttgt 220

<210> 1003
<211> 125
<212> nucleic acid
<213> Zea mays

<400> 1003

cccacgcgtc cgcgcctcca cagcgtcagg gagcgcattg gcgactcact ctctgcccac 60

cccaatgagc ttgtcgccgt cttcaccagg ctgaaaaacc ttggaaaggg tatgctgcag 120

cccca 125

<210> 1004
<211> 127
<212> nucleic acid
<213> Zea mays

<400> 1004

cccacgcgtc cgatttgatt tgcgttcact gcgttgcgtt tccttggagg ggattgttct 60

ctcctctcct ttggattgga ggtccctcct tcttctccgc tctctctcag aggaatgcct 120

agggatc 127

<210> 1005
<211> 188
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (40)
<223>

<400> 1005

actccgttca ccccgtccat ttgatttgcg ttcaccgcgn tgcggttcct tggaggggat 60

tgttctcaac tctcctttgg attggaggtc cctccttctt ctcctctctc tctcagagga 120

aggcctgagg atccaggaag aggacagcaa ttggggaagg tgcaggtgac cgtgtcctga 180

gccgcctc 188

<210> 1006
<211> 123
<212> nucleic acid
<213> Zea mays

<400> 1006

atttgcgttc acagcgttgc gtttccttgg aggggattgt tctcacctct cctttggatt 60

ggaggaccct ccttcttctc ctctctctct cagaggaagg cctgaggatc caggaagagg 120

aca 123

<210> 1007

<211> 104
<212> nucleic acid
<213> Zea mays

<400> 1007

tgcaggtgac cgtgtcctga gccgcctcca cagcgtcagg gagcgcattg gcgactcact 60

ctctgcccac cccaatgagc ttgtcgcgtc ttcaccaggc tgaa 104

<210> 1008
<211> 106
<212> nucleic acid
<213> Zea mays

<400> 1008

tgcaggtgac cgtgtcctga gccgcctcca cagcgtcagg gagcgcattg gcgactcatt 60

ctctgcacac cccaatgagc ttgtcgcgtc ttcaccaggc tgaaaa 106

<210> 1009
<211> 126
<212> nucleic acid
<213> Zea mays

<400> 1009

gtttcagttc atcgattcag ttcttgcctg aggatccagg aagaggacag caatgggaga 60

acgtgcaggt gaccgtgtcc tgagccgcct ccacagcgtc aaggagcgca ttggcgactc 120

actctc 126

<210> 1010
<211> 242
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (18),(30),(35),(43),(46),(53),(57),(69),(74),(78),(119),
(124),(127),(130),(138),(150),(154),(157)...(158),(173),
(175),(195),(209),(211),(216),(221),(231)
<223> unsure at all n locations

<400> 1010

tcgacggcac gcgtccangc gtgacgcggn gttgntcggc acnaancttc acntcanagc 60

aactacctna actngtgngg gctgaccgtt gacgactact aaggagtcca aggacaggna 120

gganca ngcn gagttcanga agatgtacan gctnatnnac tagtacaagt tgnanggcca 180

tatccggtgg atctnggctc acatgaacna ntttcncaat ngaaacctgt nccgttacat 240

aa 242

<210> 1011
<211> 229
<212> nucleic acid
<213> Zea mays

<400> 1011

tctttgacaa atgcaaggca gatccgtgct actggtacaa gatctcacag ggcggcgtgc 60

acagaatcta tgagacgtac acctggaagc tctacttcga gaggctgatg accctgaccg 120

gcgtgtacgg cttctggaag tacgtgagca tactgtagag gcacgagacc ctccgctaca 180

tcgagatgta ctacgccctg aagcaccgga tcctggcaag ccaggttcc 229

<210> 1012
<211> 455
<212> nucleic acid
<213> Zea mays

<400> 1012

atgttattgt aaatatatta ttggaaggga agggtttgat catgcataga agttatgcta 60

acgctctcga ttcccggtcg accccgcgtc cggttctgag tacttggcat tcaaggaaca 120

gctggtggat ggacaatcca acaacaactg tgtgcttgag cttgattagg agcccttcaa 180

tgcctacttt cctcgtcctt acatgtcgaa gtccatcgga catggaatgc aattccttaa 240

ccgacacctg tcgtccaagt tgttccagga caaggagagt tcgtacccct tgctgaactt 300

cctcaaggct cataactaca aaggccacga cgatgatgtt ggatgacaga attccaagcc 360

ttcgtggtct ccaatcatcc ctgaaaaagg cagaagagta tctactgagt gttccttaag 420

acactcccta ctcggagttc aaccataggt tccaa 455

<210> 1013
<211> 178
<212> nucleic acid
<213> Zea mays

<400> 1013

taaacaatga caccgtcggc cattacgagt cacacatggc gttcacaatg cctggcctgt 60

accgagtcgt ccgcggaatt gatgtgctct accccaagtt caacatcctg tcttctggcg 120

cggacctttc catctacttc ccgtacactg agtcgcacac aaagctgaac tgacttaa 178

<210> 1014
<211> 386
<212> nucleic acid
<213> Zea mays

<400> 1014

gataagaatc atctttcttg aacacagaag gatgcactgc gcctgacctt actactcgac 60

tcagtcgacc atgccgactt gatcatcacc agtaccttcc aagagatcgc cggaaacaag 120

tacaccgtca ggcggtggta tttacacatg gggttgacga tgcctggcct gtaccgactt 180

gcccactgca ttgatgtctt ccaccacaag ctcaacatcg tgtctcctct cgcgcaccta 240

tccatctact taccgtacac ctactcgcac aatacactga cctgccttca cccggagatt 300

gaggagctcc tgtacacaca atccgctaac actgagcaca acttcatact taacgactgg 360

atcaacccca tcatattcta catggc 386

<210> 1015
<211> 428
<212> nucleic acid
<213> Zea mays

<400> 1015

cgcggcagac ggtagccgac ttcttcgacc ggtgcaagca agacccagat cactggggga 60

gaatatctgg agcagggctg cagcgcatat acgagaagta cacatggaag atatactcag 120

agaggttgat gacactggcc ggggtctacg gtttctggaa gtacgtgtcg aagctcgaga 180

ggcgggagac gaggcgctac cttgagatgt tctacatact gaagttccgc gagctggcga 240

agaccgtgcc gcttgcaatt gaccaaccgc agtagcttgc gcaactgcga ctgcgtagca 300

cttggtacaa gactgaaacc tgaaggacct tcagtaattt aggcgcggca gacggtagcc 360

aataaaatgt gccggagctg aactggtttt tattatgtac ataatggcag tataacaaaa 420

ttactgaa 428

<210> 1016
<211> 485
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (12),(20)
<223> unsure at all n locations

<400> 1016

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gagttgctaa tncccgttcn cgtcattcgt cactcttcgt attaccgctg gacgccactc   60
atcctggaga tgtttcgacc tcatcgagca gtataacctg aacgggcaca tccgctggat  120
ctcgttccat tttaaccgcg tccgcgactg cgagctttac cgctacatct gcgacaccaa  180
tggcgccttc gtgcagcctg ctttctacga tgctttcggg cttactgtgg ttgaggccat  240
gacctgcggc ctgcccacgt ttgccacagc ctacggctgt cctgccgaga tcatcgtgca  300
cggcgtgtct ggctaccaca ttgaccctta ccagggcgac aaggcttttg cccttgctcg  360
tggacttttt tgacaagtgc catgcttact cctagccact ttgagcaaga tcttccatgg  420
ctggcttcaa cttatctagg agaaattccc ctggaaactt tactcttata agctttttac  480
cctta                                                              485
```

<210> 1017
<211> 417
<212> nucleic acid
<213> Zea mays

<400> 1017

```
cccacgcgtc cgcggacgcg tgggttttgt tttgccgagg ccattggtgc catgcggcca   60
gcccttttct tctccatggt tcccatcgat gtgtttttgt tcggttctct cgtcagatct  120
gtataaatag gcgcctacct tctccgccat tcctcggtcc tgtgaagcgt ttcagttcat  180
cgattgagtt cttggatgcc tctagttgta ttgtgtgttt cttctttctg gtctatgtac  240
taggactata gtaccaggat ctgagtcgtt ttttttggg tcttgctcct gtctgccgtt  300
tctttccccc cttccagagt taggttctgt tggtttcttg cctgcaatat agtttcgtgg  360
cgcaccgtca agggtgtgtc tagactttaa agactggttg ttggcagttg ggtttat     417
```

<210> 1018

<211> 411
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (231),(376)
<223> unsure at all n locations

<400> 1018

acactaattc gcagtgggca tctggatgac cggtcaaagc ccaccctctt ctccatggca 60

agactcgaca gggtgaagaa cataacgggg ctggtcgaag cttttgctaa gtgcgctaag 120

ctgagggagc tggtaaacct tgtcgtcgtt gccgggtaca atgatgtcaa caagtccaag 180

gacagggaag agatcgcgga gatagagaag atgcatgaac tcatcaagac ncacaacttg 240

ttcgggcagt ccgctggatc ctgccagaca acaggcccgt aacgcgagct ctatcgctac 300

atcgctgata ccaatggtgc tttcgtacac ccgggcctct atgaagcgtt cggtctcacc 360

gtcgttgagg ccatgnactg tgggcttcct actttcgcga cgctccatgg a 411

<210> 1019
<211> 478
<212> nucleic acid
<213> Zea mays

<400> 1019

tgcagatgaa ccatgccgac ttcatcatca ccagtacctt ccaagagatc gccggaaaca 60

aggacaccgt cggccggtgc gagtcacaca tggcgttcac aatgcctggc ctgtaccgcg 120

ttgtccacgg cattgatgtg ttcgacccca agttcaacat cgtgtctcct ggcgcggacc 180

tgtccatcta cttcccgtac accgagtcgc acaagaggct gacctccctt cacccggaga 240

ttgaggagct cctgtacagc caaaccgaga acacggagca caagttcgtt ctgaacgaca 300

ggaacaagcc aatcatcttc tccatggctc gtctcgaccg tgtgaagaac ttgactgggc 360

tggtggagct gtacggccgg aacaagcggc tgcaggagct ggtgaacctc gtggtcgtct 420

gcggcgacca tggcaaccct tccaaggaca aggaggaaca ggccgagttc aagaagat 478

<210> 1020
<211> 469
<212> nucleic acid
<213> Zea mays

<400> 1020

caaggaggag caggccgagt tcaagaagat gtttgacctc atcgagcagt acaacctgaa 60

cgggcacatc cgctggatct ccgcccagat gaaccgcgtc cgcaacggcg agctgtaccg 120

ctacatctgc gacaccaagg gcgccttcgt gcagcctgct ttctacgagg ctttcgggct 180

gacggtggtt gaggccatga cctgcggcct gcccacgttt gccacagcct acggcggtcc 240

ggccgagatc atcgtgcacg gcgtgtctgg ctaccacatc gacccttacc agggcgacaa 300

ggcgtcggcc ctgctcgtgg acttcttcga caagtgccag gcggacccga gccactggag 360

caagatctcc cagggcgggc tccagcgtat cgaggagaag tacacctgga agctctactc 420

ggagaggctg atgaccctca ccggcgtgta cgggttctgg aagtacgtg 469

<210> 1021
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 1021

tggcaaccta gtcgccactc tgctcgcgca caagttggga gtcactcagt gtaccatggc 60

tcatgccttg gagaaaacca aataccccaa ctcggacata tacttggaca aattcgacag 120

ccagtaccac ttctcttgcc agttcacagc tgaccttatt gccatgaacc acaccgattt 180

catcatcacc agcacattcc aagaaatcgc gggaagcaag gacaccgtgg ggcagtacga 240

gtcccacatc gcgttcactc ttcctgggct ctaccgtgtc gtccatggca tcgatgtttt 300

cgatcccaag ttcaacattg tctcccctgg agcagacatg agtgtttact acccgtatac 360

ggaaaccgac aagagactca ctgccttcca tcctgaaatc gaggagctca tctacagcga 420

cgtcgagaac tccgagcaca ag 442

<210> 1022
<211> 441
<212> nucleic acid
<213> Zea mays

<400> 1022

actcagtgta ccatcgctca tgccttgtta gaaaaccaaa taccccaact cggacggata 60

cttggacaaa ttcgacagcc agtaccactt ctcttgccag ttcacagctg accttattgc 120

catgaaccac accgatttca tcatcaccag cacattccaa gaaatcgcgg gaagcaagga 180

caccgtgggg cagtacgagt cccacatcgc gttcactctt cctgggctct accgtgtcgt 240

ccatggcatc gatgttttcg atcccaagtt caacattgtc tcccctggag cagacatgag 300

tgtttactac ccgtatacgg aaaccgacaa gagactcact gccttccatc ctgaaatcga 360

ggagctcatc tacagcgacg tcgagaactc cgagcacaag ttcgtgctga aggacaagaa 420

gaagccgatc atcttctcga t 441

<210> 1023
<211> 453
<212> nucleic acid
<213> Zea mays

<400> 1023

cccacgcgtc cgggacaccg tcggccatta cgagtcacac atggcgttca caatgcctgg 60

cctgtaccgc gttgtccacg gcattgatgt gttcgacccc aagttcaaca tcgtgtctcc 120

tggcgcggac ctgtccatct acttcccgta caccgagtcg cacaagaggc tgacctccct 180

tcacccggag attgaggagc tcctgtacag ccaaaccgag aacacggagc acaagttcgt 240

tctgaacgac aggaacaagc caatcatctt ctccatggct cgtctcgacc gtgtgaagaa 300

cttgactggg ctggtggagc tgtacggccg gaacaagcgg ctgcaggagc tggtgaacct 360

cgtggtcgtc tgcggcgacc atggcaaccc ttccaaggac aaggaggagc aggccgagtt 420

caagaagatg tttgacctca tcgagcagta caa 453

<210> 1024
<211> 444
<212> nucleic acid
<213> Zea mays

<400> 1024

ctgaaggaca agaagaagcc gatcatcttc tcgatggcgc gtctcgaccg cgtgaagaac 60

atgacaggcc tggtcgagat gtacggcaag aacgcgcgcc tgagggagct ggcgaacctc 120

gtgatcgttg ccggtgacca cggcaaggag tccaaggaca gggaggagca ggcggagttc 180

aagaagatgt acagcctcat cgacgagtac aagttgaagg gccatatccg gtggatctcg 240

gcgcagatga accgcgtccg caacggggag ctgtaccgct acatttgcga tacgaagggc 300

gcattcgtgc agcctgcgtt ctacgaagcg ttcggcctga ctgtgatcga gtccatgacg 360

tgcggtctgc caacgatcgc gacctgccat ggtggccctg ctgagatcat cgtggacggg 420

gtatctggcc tgcacattga ccct 444

<210> 1025
<211> 441
<212> nucleic acid
<213> Zea mays

<400> 1025

caccgtgggg cagtacgagt cccacatcgc gttcactctt cctgggctgt accgtgtgat 60

ccatggcatc gatgttttcg atcccaagtt caacattgtc tcccctggag cagacatgag 120

tgtttactac ccgtatacgg aaaccgacaa gagactcact gccttccatc ctgaaatcga 180

ggagctcatc tacagcgacg tcgagaactc cgagcacaag ttcgtgctga aggacaagaa 240

gaagccgatc atcttctcga tggcgcgtct cgaccgcgtg aagaacatga caggcctggt 300

cgagatgtac ggcaagaacg cgcgcctgag ggagctggcg aacctcgtga tcgttgccgg 360

tgaccacggc aaggagtcca aggacaggga ggagcaagcg gagttcaaga agatgtacag 420

cctcatcgac gagtacaagt t 441

<210> 1026
<211> 380
<212> nucleic acid
<213> Zea mays

<400> 1026

cgcatgagat tgctggagag cttcaggcca atcctgacct gatcatcgga aactacagtg 60

acggaaacct tgttgcgtgt ttgctcgccc acaagatggg tgttactcac tgtaccattg 120

cccatgcgct tgagaaaact aagtacccta actccgacct ctactggaag aagtttgagg 180

atcactacca cttctcgtgc cagttcacca ctgacttgat tgcaatgaac catgccgact 240

tcatcatcac cagtaccttc caagagatcg ccggaaacaa ggacaccgtc ggccagtacg 300

agtcacacat ggcgttcaca atgcctggcc tgtaccgcgt tgtccacggc attgatgtgt 360

tcgaccccaa gttcaacatc 380

<210> 1027
<211> 419
<212> nucleic acid
<213> Zea mays

<400> 1027

cactgccttc catcctgaaa tcgaggagct catctacagc gacgtcgaga actccgagca 60

caagttcgtg ctgaaggaca agaagaagcc gatcatcttc tcgatggcgc gtctcgaccg 120

cgtgaagaac atgacaggcc tggtcgagat gtacggcaag aacgcgcgcc tgagggagct 180

ggcgaacctc gtgatcgttg ccggtgacca cggcaaggag tccaaggaca gggaggagca 240

ggcggagttc aagaagatgt acagcctcat cgacgagtac aagttgaagg gccatatccg 300

gtggatctcg gcgcagatga accgcgtccg caacggggag ctgtaccgct acatttgcga 360

tacgaagggc gcattcgtgc agcctgcgtt ctacgaagcg ttcggcctga ctgtgatcg 419

<210> 1028
<211> 437
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (413)
<223>

<400> 1028

cccacgcgtc cggaaacctt gttgcgtgtt tgctcgccca caagatgggt gttactcact 60

gtaccattgc ccatgcgctt gagaaaacta agtaccctaa ctccgacctc tactggaaga 120

agtttgagga tcactaccac ttctcgtgcc agttcaccac tgacttgatt gcaatgaacc 180

atgccgactt catcatcacc agtaccttcc aagagatcgc cggaaacaag gacaccgtcg 240

gccagtacga gtcacacatg gcgttcacaa tgcctggcct gtaccgcgtt gtccacggca 300

ttgatgtgtt cgaccccaag ttcaacatcg tgtctcctgg cgcggacctg tccatctact 360

tcccgtacac cgagtcgcac aagaggcttg acctcctttc acccgagaat gangagctcc 420

tgtacagcca aaccgag 437

<210> 1029
<211> 425
<212> nucleic acid

<213>   Zea mays

<400>   1029

cctgaacggg cacatccgct ggatctccgt ccagatgaac cggtccgcaa cggcgagggt   60

agcgctacat ctgcgacacc aagggcgcct tcgtgcagcc tgctttctac gaggctttcg   120

ggctgacggt ggttgaggcc atgacctgcg gcctgcccac gtttgccaca gcctacggcg   180

gtccggccga gatcatcgtg cacggcgtgt ctggctacca catcgaccct taccagggcg   240

acaaggcgtc ggccctgctc gtggacttct tcgacaagtg ccaggcggac ccgagccact   300

ggagcaagat ctcccagggc gggctccagc gtatcgagga gaagtacacc tggaagctct   360

actcggagag gctgatgacc ctcaccggcg tgtacgggtt ctggaagtac gtgtccaacc   420

tggag   425

<210>   1030
<211>   431
<212>   nucleic acid
<213>   Zea mays

<400>   1030

cgaccgtgtg aagaacttga ctgggctggt ggagctgtac ggccggaaca agcggctgcg   60

ggagctggtg aacctcgtgg tcgtctgcgg cgaccatggc aacccttcca aggacaagga   120

ggagcaggcc gagttcaaga agatgtttga cctcatcgag cagtacaacc tgaacgggca   180

catccgctgg atctccgccc agatgaaccg cgtccgcaac ggcgagctgt accgctacat   240

ctgcgacacc aagggcgcct tcgtgcagcc tgctttctac gaggctttcg ggctgacggt   300

ggttgaggcc atgacctgcg gcctgcccac gtttgccaca gcctacggcg gtccggccga   360

gatcatcgtg cacggcgtgt ctggctacca catcgaccct taccagggcg acaaggcgtc   420

ggcctgctcg t   431

<210>   1031
<211>   512
<212>   nucleic acid
<213>   Zea mays

<220>
<221>   unsure
<222>   (13),(33)
<223>   unsure at all n locations

<400> 1031

agaaaaagtg tcngtgcctg caccgctcgc tancgcacta ctcactggtt ccaatatcgg 60

gggaggcgga cgcgttcgaa ctgatcgagc agtacaacct gaacgggcac atccgctgga 120

tctccgccca gatgaaccgg gtccgcaacg gcgagctgta ccgctacatc tgcgacacca 180

agggcgcctt cgtgcagcct gctttctacg aggctttcgg gctgacggtg gttgaggcca 240

tgacctgcgg cctgcccacg tttgccacag cctacggcgg tccggccgag atcatcgtgc 300

acggcgtgtc tggctaccac atcgaccctt accagggcga caaggcgtcg gccctgctcg 360

tggacttctt cgacaagtgc caggcggacc cgagccactg gagcaagatc tcccagggcg 420

ggctccagcg tatcgaggag aagtacacct ggaagctcta ctcggagagg ctgatgaccc 480

tcaccggcgt gtacgggttc tgggagtacg tg 512

<210> 1032
<211> 419
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (348)
<223>

<400> 1032

gacaaggaga gcatgtaccc cttgctcaac ttccttcgcg cccacaacta caaggggatg 60

accatgatgt tgaacgacag aatccgcagt ctcagtgctc tgcaaggtgc gctgaggaag 120

gctgaggagc acctgtccac cctacaagct gataccccat actctgaatt tcaccacagg 180

ttccaggaac ttggtctgga gaagggttgg ggtgattgcg ctaagcgtgc acaggagact 240

atccacctcc tcttggacct cctggaggcc ccagatccgt ccaccctgga gaagttcctt 300

ggaacgatcc ccatggtgtt caatgtcgtt atcctctccc ctcatggnta cttcgctcaa 360

gctaatgtct tgggttaccc tgacaccgga ggccaggttg tctacatctt ggatcaagt 419

<210> 1033
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1033

cccacgcgtc cggaaatcgc gggaagcaag gacaccgtgg ggcagtacga gtcccacatc 60

gcgttcactc ttcctgggct ctaccgtgtc gtccatggca tcgatgtttt cgatcccaag 120

ttcaacattg tctcccctgg agcagacatg agtgtttact acccgtatac ggaaaccgac 180

aagagactca ctgccttcca tcctgaaatc gaggagctca tctacagcga cgtcgagaac 240

tccgagcaca agttcgtgct gaaggacaag aagaagccga tcatcttctc gatggcgcgt 300

ctcgaccgcg tgaagaacat gacaggcctg gtcgagatgt acggcaagaa cgcgcgcctg 360

agggagctgg cgaacctcgt gatcgttgcc ggtgaccacg gcaaggagtc caaggacagg 420

g 421

<210> 1034
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1034

cggacgcgtg ggagagtttg taccccttgc tgaacttcct caaggctcat aactacaagg 60

gcacgacgat gatgttgaat gacagaatcc aaagccttcg tggtctccaa tcatccctga 120

gaaaggcaga ggagtatcta ctgagtgttc ctcaagacac tccctactcg gagttcaacc 180

ataggttcca agagcttggt ttggagaagg gttggggtga cactgcgaag cgtgtactcg 240

acacactcca cttgcttctt gaccttcttg aggcccctga tcctgccaac ttggagaagt 300

tccttggaac tataccaatg atgttcaatg ttgttatcct ttctcctcat ggctacttcg 360

ctcagtccaa tgtgcttgga taccctgaca ctggcggtca ggttgtgtac attctggatc 420

a 421

<210> 1035
<211> 379
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (357)
<223>

<400> 1035

ggcgcattcg tgcagcctgc gttctacgaa gcgttcggcc tgactgtgat cgagtccatg 60

acgtgcggtc tgccaacgat cgcgacctgc catggtggcc ctgctgagat catcgtggac 120

ggggtatctg gcctgcacat tgacccttac cacagcgaca aggccgcgga tatcctggtc 180

aacttctttg acaaatgcaa ggcagatccg agctactggg acaagatctc acagggcggc 240

ctgcagagaa tttatgagaa gtacacctgg aagctctact ccgagaggct gatgaccctg 300

accggcgtgt acgggttctg gaagtacgtg agcaacctgg agaggcgcga gacccgncgc 360

tacatcgaga tgttctacg 379

<210> 1036
<211> 424
<212> nucleic acid
<213> Zea mays

<400> 1036

ctcattgtta ccaggctgtt gcctgatgct gctgggacta cgtgcggtca gcggctggag 60

aaggtcattg gtactgagca cacagacatc attcgcgttc cgttcagaaa tgagaatggc 120

atcctccgca agtggatctc tcgttttgat gtctggccat acctggagac atacactgag 180

gatgtttcca gtgaaataat gaaagaaatg caggccaagc ctgaccttat cattggcaac 240

tacagcgatg gcaacctagt cgccactctg ctcgcacaca agttgggagt cactcagtgt 300

accatcgctc atgccttgga gaaaaccaaa taccccaact cggacatcta cttggacaag 360

ttcgacagcc agtaccactt ctcttgccag ttcacagctg accttattgc catgaaccac 420

actg 424

<210> 1037
<211> 447
<212> nucleic acid
<213> Zea mays

<400> 1037

gacatgagtg tttactaccc gtatacggaa accgacaaga gactcactgc cttccatcct 60

gaaatcgagg agctcatcta cagcgacgtc gagaactccg agcacaagtt cgtgctgaag 120

gacaagaaga agccgatcat cttctcgatg gcgcgtctcg accgcgtgaa gaacatgaca 180

ggcctggtgg agatgtacgg caagaacgcg cgcctgaggg agctggcgaa cctcgtgatc 240

gtcgccggtg accacggcaa ggagtccaag gacagggagg agcaggcgga gttcaagaag 300

atgtacagcc tcatcgacga gtacaagttg aagggccata tccggtggat ctcggcgcag 360

atgaaccgtg tccgcaacgg ggagctgtac cgctacattt gtgataccaa gggcgcattc 420

gtgcaacctg cgttctacga agcgttc 447

<210> 1038
<211> 409
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (395)
<223>

<400> 1038

gtgcaacatt gtctcccttt agcatactga gtgtttacta cccgtatacg gaaaccgaca 60

agagactcac tgccttccat cctgaaatcg aggagctcat ctacagcgac gtcgagaact 120

ccgagcacaa gttcgtgctg aaggacaaga agaagccgat catcttctcg atggcgcgtc 180

tcgaccgcgt gaagaacatg acaggcctgg tcgagatgta cggcaagaac gcgcgcctga 240

gggagctggc gaacctcgtg atcgttgccg gtgaccacgg caaggagtcc aaggacaggg 300

aggagcaagc ggagttcaag aagatgtaca gcctcatcga cgagtacaag ttgaaaggcc 360

atatccggtg gatctcggcg cagatgaacc gcgtncgcaa cggggagct 409

<210> 1039
<211> 418
<212> nucleic acid
<213> Zea mays

<400> 1039

atctcacagg gcggcctgca gagaatctat gagaagtaca cctggaagct ctactccgag 60

aggctgatga ccctgaccgg cgtgtacggg ttctggaagt acgtgagcaa cctggagagg 120

cgcgagaccc gccgctacat cgagatgttc tacgccctga agtaccgtag cctggcaagc 180

caggttccgc tgtccttcga ttagtacggg gaaagaagaa gaagaagaag cccaggccgg 240

agaaccatcg cctgcatttc gatctgtttc accgcaattc gcattgttag tcgtgtattg 300

gagttatgtg tacttggttt ccaagaactt tggttccttc tcgttttttt tccttgtttg 360

agcgtttttg ggcagcgctg gcctggttcc tagtatggtg ggaattggct gcaccttt 418

<210> 1040
<211> 439
<212> nucleic acid
<213> Zea mays

<400> 1040

cccgtatacg gaaaccgaca agagactcac tgccttccat cctgaaatcg aggagctcat 60

ggacagcgac gtcgagaact ccgagcacaa gttcgtgctg aaggacaaga agaagccgat 120

catcttctcg atggcgcgtc tcgaccgcgt gaagaacatg acaggcctgg tggagatgta 180

cggcaagaac gcgcgcctga gggagctggc gaacctcgtg atcgtcgccg gtgaccacgg 240

caaggagtcc aaggacaggg aggagcatgc tgagttcaag aagatgtaca gcctcatcga 300

cgagtacaag ttgaagggcc atatccggtg gatctcggcg cagatgaacc gggtccgcaa 360

acgggagctg taccgctaca tttgtgatac caagggcgca ttccggcagc ctgcgttcta 420

cgaagcgttc ggcctgact 439

<210> 1041
<211> 392
<212> nucleic acid
<213> Zea mays

<400> 1041

ctccgaagat cctcattgtt accaggctgt tgcctgatgc tgctgggact acgtgcgggc 60

agcggctgga gaaggtcatt ggtactgagc acacagacat cattcgcgtt cccttcagaa 120

atgagaatgg catcctccgc aagtggatct ctcgttttga tgtctggcca tacctggaga 180

catacactga ggatgtttcc agtgaaataa tgaaagaaat gcaggccaag cctgacctta 240

tcattggcaa ctacagcgat ggcaacctag tcgccactct gctcgcgcac aagttgggag 300

tcactcagtg taccatcgct catgccttgg agaaaaccaa ataccccaac tcggacatat 360

acttggacaa attcgacagc cagtaccact tc 392

<210> 1042
<211> 418
<212> nucleic acid

<213> Zea mays

<400> 1042

cgcgtctcga ccgcgtgaag aacatgacag gcctggtgga gatgtacggc aagaacgcgc 60

gcctgaggga gctggcgaac ctcgtgatcg tcgccggtga ccacggcaag gagtccaagg 120

acagggagga gcatgcggag ttcaagaaga tgtacagcct catcgacgag tacaagttga 180

agggccatat ccggtggatc tcggcgcaga tgaaccgcgt ccgcaacggg gagctgtacc 240

gctacatttg cgataccaag ggcgcattcg tgcagcctgc gttctacgaa gcgttcggcc 300

tgactgtgat cgagtccatg acgtgcggtc tgccaacgat cgcgacctgc catggtggcc 360

ctgctgagat catcgtggac ggggtatctg gcctgcacat tgacccttac cacagcga 418

<210> 1043
<211> 436
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (426)
<223>

<400> 1043

gccaggcgga cccgagccac tggagcaaga tctcccaggg cgggctccag cgtagcgagg 60

agaagtacac ctggaagctc tactcggaga ggctgatgac cctcaccggc gtgtacgggt 120

tctggaagta cgtgtccaac ctggagaggc gcgagacccg gcggtacctg gagatgctgt 180

acgcgctcaa gtaccgcacc atggcgagca ccgtgccgct ggccgtggag ggagagccct 240

ccagcaagtg atgcgcgacg gcggccacag acctgatcga tcgatgagcg agagggagca 300

ctcggagtgt cgtgtctttt cccttgccat ttctttcttt ttttcccttc ccggaggcga 360

aaaaaagagt ctgcttttgc taggcggcgg gcgttcgttg ctgctctttg cttcaagagt 420

taaatntacc tacctt 436

<210> 1044
<211> 376
<212> nucleic acid
<213> Zea mays

<400> 1044

gtttgtaccc cttgctgaac ttcctcaagg ctcataacta caagggcacg acgatgatgt 60

tgaatgacag aatccaaagc cttcgtggtc tccaatcatc cctgagaaag gcagaggagt 120

atctactgag tgttcctcaa gacactccct actcggagtt caaccatagg ttccaagagc 180

ttggcttgga gaagggttgg ggtgacactg cgaagcgtgt actcgacaca ctccacttgc 240

ttctcgacct tctggaggcc cctgatcctg ccaacttgga gaagttcctt ggaactatac 300

caatgatgtt caacgttgtt atcctgtctc ctcatggcta cttcgcccag tccaatgtgc 360

ttggataccc tgacac 376

<210> 1045
<211> 412
<212> nucleic acid
<213> Zea mays

<400> 1045

ctccgaagat cctcattgtt accaggctgt tgcctgatgc tgctgggact acgtgcgggg 60

atcggctgga gaaggtcatt ggtactgagc acacagacat cattcgcgtt cccttcagaa 120

atgagaatgg catcctccgc aagtggatct ctcgttttga tgtctggcca tacctggaga 180

catacactga ggatgtttcc agtgaaataa tgaaagaaat gcaggccaag cctgacctta 240

tcattggcaa ctacagcgat ggcaacctag tcgccactct gctcgcgcac aagttgggag 300

tcactcagtg taccatcgct catgccttgg agaaaaccaa ataccccaac tcggacatat 360

acttggacaa attcgacagc cagtaccact tctcttgcca gttcacagct ga 412

<210> 1046
<211> 424
<212> nucleic acid
<213> Zea mays

<400> 1046

ggcaactaca gcgatggctt cctagttctc actctgctcg cacacaagtt gggagtgact 60

cagtgtacca tcgctcatgc cttggagaaa accaaatacc ccaactcgga catctacttg 120

gacaagttcg acagccagta ccacttctct tgccagttca cagctgacct tattgccatg 180

aaccacactg atttcatcat caccagcaca ttccaagaaa tcgcgggaag caaggacacc 240

gtggggcagt acgagtccca catcgcgttc actcttcctg ggctctaccg tgtcgtccat 300

ggcatcgatg ttttcgatcc caagttcaac attgtctccc ctggagcaga catgagtgtt 360

tactacccgt atacggaaac cgacaagaga ctcactgcct ttcatcctga aatcgaggag 420

ctca 424

<210> 1047
<211> 433
<212> nucleic acid
<213> Zea mays

<400> 1047

gaagatgttt gacctcatcg agcagtacaa cctgaacggg cacatccgct ggatctgggc 60

ccagatgaac cgcgtccgca acggcgagct gtaccgctac atctgcgaca ccaagggcgc 120

cttcgtgcag cctgctttct acgaggcttt cgggctgacg gtggttgagg ccatgacctg 180

cggcctgccc acgtttgcca cagcctacgg cggtccggcc gagatcatcg tgcacggcgt 240

gtctggctac cacatcgacc cttaccaggg cgacaaggcg tcggccctgc tcgtggactt 300

cttcgacaag tgccaggcgg acccgagcca ctggagcaag atctcccagg gcgggctcca 360

gcgtatcgag gagaagtaca cctgtaagct ctactcggag aggctgatga ccctaacggc 420

gtgtacgggt tct 433

<210> 1048
<211> 447
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (361)
<223>

<400> 1048

ctgatcctgc caacttggag aagttccttg gaactatacc aatgatgttc aatgttgtga 60

tccgttctcc tcatggctac ttcgctcagt ccaatgtgct tggataccct gacactggcg 120

gtcaggttgt gtacattctg gatcaagtcc gtgctttgga gaatgagatg cttctgagga 180

ttaagcagca aggccttgat atcactccga agatcctcat tgttaccagg ctgttgcctg 240

atgctgctgg gactacgtgc ggtcagcggc tggagaaggt cattggtact gagcacacag 300

acatcattcg cgttccgttc agaaatgaga atggcatcct ccgcaagtgg atctctcgtt 360

ntgatgtctg gccatacctg gagacataca ctgaggatgt ttccagtgaa ataatgaaag 420

aaatgcaggc caagcctgac cttatca 447

<210> 1049
<211> 383
<212> nucleic acid
<213> Zea mays

<400> 1049

acctcatcga gcagtacaac ctgaacgggc acatccgctg gatctccgcc cagatgaacc 60

gcgtccgcaa cggcgagctg taccgctaca tctgcgacac caagggcgcc ttcgtgcagc 120

ctgctttcta cgaggctttc gggctgacgg tggttgaggc catgacctgc ggcctgccca 180

cgtttgccac agcctacggc ggtccggccg agatcatcgt gcacggcgtg tctggctacc 240

acatcgaccc ttaccagggc gacaaggcgt cggccctgct cgtggacttc ttcgacaagt 300

gccaggcgga cccgagccac tggagcaaga tctcccaagg cgggcttcaa cgtatcgagg 360

agaagtacac ctggaagctt tac 383

<210> 1050
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1050

gtgtgggtag cctgcgttct acgaagcgtt cggcctgact gtgatcgagt ccatgacgtg 60

cggtctgcca acgatcgcga cctgccatgg tggccctgct gagatcatcg tggacggggt 120

atctggcctg cacattgacc cttaccacag cgacaaggcc gcggatatcc tggtcaactt 180

ctttgacaaa tgcaaggcag atccgagcta ctgggacaag atctcacagg gcggcctgca 240

gagaatctat gagaagtaca cctggaagct ctactccg 278

<210> 1051
<211> 408
<212> nucleic acid
<213> Zea mays

<400> 1051

aagatgtaca gcctcatcga cgagtacaag ttgaagggcc atatccggtg gatctcggcg 60

cagatgaacc gcgtccgcaa cggggagctg taccgctaca tttgcgatac gaagggcgca 120

ttcgtgcagc ctgcgttcta cgaagcgttc ggcctgactg tgatcgagtc catgacgtgc 180

ggtctgccaa cgatcgcgac ctgccatggt ggccctgctg agatcatcgt ggacggggta 240

tctggcctgc acattgaccc ttaccacagc gacaaggccg cggatatcct ggtcaacttc 300

tttgacaaat gcaaggcaga tccgagctac tgggacaaga tctcacaggg cggcctgcag 360

agaatctatg agaagtacac ctggaagctc tactccgaga ggctgatg 408

<210> 1052
<211> 434
<212> nucleic acid
<213> Zea mays

<400> 1052

ccagttcaca gctgacctta ttgccatgaa ccacaccgat ttcatcatca ccagcagatt 60

ccaagaaatc gcgggaagca aggacaccgt ggggcagtac gagtcccaca tcgcgttcac 120

tcttcctggg ctctaccgtg tcgtccatgg catcgatgtt ttcgatccca agttcaacat 180

tgtctcccct ggagcagaca tgagtgttta ctacccgtat acggaaaccg acaagagact 240

cactgccttc catcctgaaa tcgaggagct catctacagc gacgtcgaga actccgagca 300

caagttcgtg ctgaaggaca agaagaagcc gatcatcttc tcgatggcgc gtctcgaccg 360

cgtgaagaac atgacaggcc tggtcgagat gtacgggaag aacgcgcgcc tgagggagct 420

ggcgaacctc gtga 434

<210> 1053
<211> 439
<212> nucleic acid
<213> Zea mays

<400> 1053

agaacgcgcg cctgagggag ctggcgaacc tcgtgatcgt tgccggtgac cacggggagg 60

agtccaagga cagggaggag caggcggagt tcaagaagat gtacagcctc atcgacgagt 120

acaagttgaa gggccatatc cggtggatct cggcgcagat gaaccgcgtc cgcaacgggg 180

agctgtaccg ctacatttgc gatacgaagg gcgcattcgt gcagcctgcg ttctacgaag 240

cgttcggcct gactgtgatc gagtccatga cgtgcggtct gccaacgatc gcgacctgcc 300

atggtggccc tgctgagatc atcgtggacg gggtatctgg cctgcacatt gacccttacc 360

acagcgacaa ggccgcggat atcctggtca acttctttga caaatgcaag gcagatccga 420

gctactggga caagatctc 439

<210> 1054
<211> 416
<212> nucleic acid
<213> Zea mays

<400> 1054

cggacgcgtg gggttgcctg atgctgctgg gactacgtgc ggtcagcggc tggagaaggt 60

cattggtact gagcacacag acatcattcg cgttcccttc agaaatgaga atggcatcct 120

ccgcaagtgg atctctcgtt ttgatgtctg gccatacctg gagacataca ctgaggatgt 180

ttccagtgaa ataatgaaag aaatgcacgc caagcctgac cttatcattg gcaactacag 240

cgatggcaac ctagtcgcca ctctgctcgc gcacaagttg ggagtcactc agtgtaccat 300

cgctcatgcc ttggagaaaa ccaaataccc caactcggac atatacttgg acaaattcga 360

cagccagtac cacttctctt gccagttcac agctgacctt attgccatga accaca 416

<210> 1055
<211> 375
<212> nucleic acid
<213> Zea mays

<400> 1055

atcgatgttt tcgatcccaa gttcaacatt gtctcccctg gagcagacat gagtgtggac 60

tacccgtata cggaaaccga caagagactc actgccttcc atcctgaaat cgaggagctc 120

atcaacagcg acgtcgagaa ctccgagcac aagttcgtgc tgaaggacaa gaagaagccg 180

atcatcttct cgatggcgcg tctcgaccgc gtgaagaaca tgacaggcct ggtggagatg 240

tacggcaaga acgcgcgcct gagggagctg gcgaacctcg tgatcgtcgc cggtgaccac 300

ggcaaggagt ccaaggacag ggaggagcat gcggagttca agaagatgta cagcctcatc 360

gacgagtaca agttg 375

<210> 1056

<211>   387
<212>   nucleic acid
<213>   Zea mays

<400>   1056

atgaaccaca ccgatttcat catcaccagc acattccaag aaatcgcggg aagcaaggac   60

accgtggggc agtacgagtc ccacatcgcg ttcactcttc ctgggctcta ccgtgtcgtc   120

catggcatcg atgttttcga tcccaagttc aacattgtct ctcctggagc agacatgagt   180

gtttactacc cgtatacgga aaccgacaag agactcactg ccttccatcc tgaaatcgag   240

gagctcatct acagcgacgt cgagaactcc gagcacaagt tcgtgctgaa ggacaagaag   300

aagccgatca tcttctcgat ggcgcgtctc gaccgcgtga agaacatgac aggcctggtg   360

gagatgtacg gcaagaacgc gcgcctg   387

<210>   1057
<211>   383
<212>   nucleic acid
<213>   Zea mays

<400>   1057

gagaatggca tcctccgcaa gtggatctct cgttttgatg tctggccata cctggagacg   60

tacgctgagg atgtttccag tgaaataatg aaagaaatgc aggccaagcc tgaccttatc   120

attggcaact acagcgatgg caacctagtc gccactctgc tcgcgcacaa gttgggagtc   180

actcagtgta ccatcgctca tgccttggag aaaaccaaat accccaactc ggacatctac   240

ttggacaagt tcgacagcca gtaccacttc tcttgccagt tcacagctga ccttattgcc   300

atgaaccaca ccgatttcat catcaccagc acattccaag aaatcgcggg aagcaaggac   360

accgtggggc agtacgaggt cca   383

<210>   1058
<211>   360
<212>   nucleic acid
<213>   Zea mays

<400>   1058

cccacgcgtc cgctgtaccg ctacatctgc gaacaccaag ggcgccttcg tgcagcctgc   60

tttctacgag gctttcgggc tgacggtggt tgaggccatg acctgcggcc tgcccacgtt   120

tgccacagcc tacggcggtc cggccgagat catcgtgcac ggcgtgtctg gctaccacat 180

cgacccttac cagggcgaca aggcgtcggc cctgctcgtg gacttcttcg acaagtgcca 240

ggcggacccg agccactgga gcaagatctc ccagggcggg ctccagcgta tcgaggagaa 300

gtacacctgg aagctctact cggagaggct gatgaccctc accggcgtgt accggttctg 360

<210> 1059
<211> 404
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (69)
<223>

<400> 1059

acgcccacgc gtccgcccac gcgtccgtcg aggagtacaa gttgaagggc catatccggg 60

ggatgtctnc tcagatgagc cgcgtccgca acggggagct gtaccgctac atttgcgata 120

cgaagggcgc attcgtgcag cctgcgttct acgaagcgtt cggcctgact gtgatcgagt 180

ccatgacgtg cggtctgcca acgatcgcga cctgccatgg tggccctgct gagatcatcg 240

tggacggggt atctggcctg cacattgacc cttaccacag cgacaaggcc gcggatatcc 300

tggtcaactt ctttgacaaa tgcaagggag atccgagcta ctgggacaag atctcacagg 360

gcggcctgca gagaatctat gagaagtaca cctggaagct ctac 404

<210> 1060
<211> 424
<212> nucleic acid
<213> Zea mays

<400> 1060

gcgacaaggc cgcggatatc ctggtcaact tctttgacaa atgcaaggca gatccgagct 60

agtgggacaa gatctcacag ggcggcctgc agagaatcta tgagaagtac acctggaagc 120

tctactccga gaggctgatg accctgaccg gcgtgtacgg gttctggaag tacgtgagca 180

acctggagag gcgcgagacc cgccgctaca tcgagatgtt ctacgccctg aagtaccgta 240

gcctggcaag ccaggttccg ctgtccttcg attagtacgg ggaaagaaga agaagaagaa 300

gcccaggccg gagaaccatc gcctgcattt cgatctgttt caccgcaatt cgcattgtta 360

gtcgtgtatt ggagttatgt gtacttggtt tccaagaact ttggttcctt ctcgtatatt 420

ttcc 424

<210> 1061
<211> 337
<212> nucleic acid
<213> Zea mays

<400> 1061

gtcgcattcg tgcagcctgc gttctacgaa gcgttcggcc tgactgtgat cgagtccatg 60

acgtgcggtc tgccaacgat cgcgacctgc catggtggcc ctgctgagat catcgtggac 120

ggggtatctg gcctgcacat tgacccttac cacagctgac aaggccgctg atatcctggt 180

caacttcttt gacaaatgca aggcagatcc gagctactgc gacaagatct cacagggcgg 240

cctgcagaga atctatgaca agtgcacctg gaagctctac tccgagaggc tgatgaccct 300

gaccggcgtg tacgggttct ggaagtacgt gagcaac 337

<210> 1062
<211> 384
<212> nucleic acid
<213> Zea mays

<400> 1062

atcaacagcg acgtcgagaa cttcgagcac aagttcgtgc tgaaggacaa gaagaaggcg 60

atcatcttct cgatggcgcg tctcgaccgc gtgaagaaca tgacaggcct ggtggagatg 120

tacggcaaga acgcgcgcct gagggagctg gcgaacctcg tgatcgtcgc cggagaccac 180

ggcaaggagt tcaaggacag ggaggagcag gcggagttca agaagatgta cagcctcatc 240

gacgagtaca agttgaaggg ccatatccgg tggatctcgg cgcagatgaa ccgcgtgcgc 300

aacggtgagc tgtaccgtta catttgcgat accaagggcg cattcgtgca gcctgcgttc 360

tacgaaacgt tcggcctgac tgtg 384

<210> 1063
<211> 413
<212> nucleic acid
<213> Zea mays

<400> 1063

ggcaaccctt ccaaggacaa ggaggagcat gccgagttca agaagatgtt tgacctcatg 60

gagcagtaca acctgaacgg gcacatccgc tggatctccg cccagatgaa ccgcgtccgc 120

aacggcgagc tgtaccgcta catctgcgac accaagggcg ccttcgtgca gcctgctttc 180

tacgaggctt tcgggctgac ggtggttgag gccatgacct gcggcctgcc cacgtttgcc 240

acagcctacg gcggtccggc cgagatcatc gtgcacggcg tgtctggcta ccacatcgac 300

ccttaccagg gcgacaaggc gtcggccctg ctcgtggact tcttcgacaa gtgccaggcg 360

gacccgagcc actggagcaa gatctcccat ggcgggctcc agcgtatcga gga 413

<210> 1064
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1064

gcgggaagca aggacaccgt ggggcagttc gagtcccaca tcgcgttcac tcttgctggg 60

ctctaccgtg tcgtccatgg catcgatgtt ttcgatccca agttcaacat tgtctcccct 120

ggagcagaca tgagtgttta ctacccgtat acggaaaccg acaagagact cactgccttc 180

catcctgaaa tcgaggagct catctacagc gacgtccaga actccgagca caagttcgtg 240

ctgaaggaca agaagaagcc gatcatcttc tcgatggcgc gtctcgaccg cgtgaagaac 300

atgaca 306

<210> 1065
<211> 379
<212> nucleic acid
<213> Zea mays

<400> 1065

ggacaccgtg gggcagtacg agttcctgat tgtgtttact cttcctgggc tctagcgcgt 60

ggtccatggc atcgatgttt tcgatcccaa gttcaacatt gtctcccctg gagcagacat 120

cactgtttac tacccgtata cggaaaccga caagagactc actgccttgc atcctgaaat 180

cgaggagctc atctacagcg acttcgataa ctccgagcac aatttcatgc tgaaggacta 240

catgatgccg atcatcttct cgatggcgcg tctataccgc gtgaagaaca tgactggcct 300

gatcgagatg tacggcatga tcgcgcgcct gagggagctg tcgaacctcg tgatcgttgc 360

cggtgaccac tgcaaggag 379

<210> 1066
<211> 352
<212> nucleic acid
<213> Zea mays

<400> 1066

gcgcagatga accgcgtccg caacggggag ctgtaccgct acatttgcga tacgaagggc 60

gcattcgtgc agcctgcgtt ctacgaagcg ttcggcctga ctgtgatcga gtccatgacg 120

tgcggtctgc caacgatcgc gacctgccat ggtggccctg ctgagatcat cgtggacggg 180

gtatctggcc tgcacattga cccttaccac agcgacaagg ccgcggatat cctggtcaac 240

ttctttgaca aatgcaaggc agatccgagc tactgggaca agatctcaca gggcggcctg 300

cagagaatct atgagaagta cacctggaag ctctactccg agaggctgat ga 352

<210> 1067
<211> 326
<212> nucleic acid
<213> Zea mays

<400> 1067

gaaatcgagg agctcatcaa cagcgacgtc gagaactccg agcacaagtt cgtgctgaag 60

gacaagaaga agccgatcat cttctcgatg gcgcgtctcg accgcgtgaa gaacatgaca 120

ggcctggtgg agatgtacgg caagaacgcg cgcctgaggg agctggcgaa cctcgtgatc 180

gtcgccggtg accacggcaa ggagtccaag gacagggagg agcaggccga gttcaagaag 240

atgtacaggc tcatcgacga gtacaagttg gagggccata tccggtggat ctaggcgcag 300

atgaaccggg ttccgcacgg ggagct 326

<210> 1068
<211> 251
<212> nucleic acid
<213> Zea mays

<400> 1068

acttcccgta caccgagtcg cacaagaggt tgacctccct tcactcggag attgaggagc 60

gtcctgtaca gccaaaccga gaacacggag cacaagttcg ttctgaacga caggaacaag 120

ccaatcatct tctccatggc tcgtctcgac cgtgtgaaga acttgactgg gctggtggag 180

ctgtacggcc ggaacaagcg gctgcaggag ctggtgaacc tcgtggtcgt ctgcggcgac 240

catggcaacc c 251

<210> 1069
<211> 424
<212> nucleic acid
<213> Zea mays

<400> 1069

ctggaagctc tactcggaga ggctgatgac cctcaccggc gtgtacgggt tctggaaggg 60

cgtgtccaac ctggagaggc gcgagacccg gcggtacctg gagatgctgt acgcgctcaa 120

gtaccgcacc atggcgagca ccgtgccgct ggccgtggag ggagagccct ccagcaagtg 180

atgcgcgacg gcggccacag acctgatcga tcgatgagcg agagggagca ctcggagtgt 240

cgtgtctttt cccttgccat ttctttcttt atttcccttc ccggaggcga aaaaaagagt 300

ctgcttttgc tacgcggcgg tcgttcgttg ctgctctttg cttcaagagt taaatttacc 360

taccttgtca aggtcttgat ccatcattga tcccagtgac gctatgttag gagtctgatg 420

gact 424

<210> 1070
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1070

cccacgcgtc cgctggaagc tctactcgga gaggctgatg accctcaccg gcgtgtacgg 60

gttctggaag tacgtgtcca acctggagag gcgcgagacc cggcggtacc tggagatgct 120

gtacgcgctc aagtaccgca ccatggcgag caccgtgccg ctggccgtgg agggagagcc 180

ctccagcaag tgatgcgcga cggcggccac agacctgatc gatcgatgag cgagagggag 240

cactcggagt gtcgtgtctt ttcccttgcc atttctttct ttttttccct tcccggaggc 300

gaaaaaaaga gtctgctttt gctaggcggc gggcgttcgt tgctgctctt tgcttcaaga 360

gttaaattta cctaccttgt caaggtcttg ttccatcatt gatccgggtg tcgctttttt 420

a 421

<210> 1071
<211> 342
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (318),(332)
<223> unsure at all n locations

<400> 1071

accgagtcgc acaagaggct gacctccctt cacccggaga ttgaggagct cctgtacagc 60

cgaaccgaga acacggagca caagttcgtt ctgaacgaca ggaacaagcc aatcatcttc 120

tccatggctc gtctcgaccg tgtgaagaac ttgactgggc tggtggagct gtacggccgg 180

aacaagcggc tgcaggagct ggtgaacctc gtggtcgtct gcggcgacca tggcaacccct 240

tccaaggaca aggaggagca ggccgagttc aagaagatgt ttgacctcat cgagcagtac 300

aacctgaacg ggcacatncg ctggatctcc gnccagatga ac 342

<210> 1072
<211> 480
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (28),(33),(55)
<223> unsure at all n locations

<400> 1072

ttactatgca gagcggtgtt gtcctacngc cancgcccgt ccgcaaacac aacangggaa 60

taacaataag tttaaccaac aaaaccggaa tcccaattgc ccggcaaggt cccctaagga 120

aggctaagga ccaccggtca accctacagg ctgataccca aaaccctgaa tttcaccaca 180

ggttcaagga acttggcctg gaaaagggtt ggggtgattg ccctaagcgt gcaaaggaaa 240

ctatccacct cctcttggac ctcctggagg ccccagatcc gtccaccctg gagaagttcc 300

ttggaacgat ccccatggtg ttcaatgtcg ttatcctctc ccctcatggt tacttcgctc 360

aagctaatgt cttgggttac cctgacaccg gaggccaggt tgtctacatc ttggatcaag 420

tgcgcgctat ggagaacgaa atgctgctga ggatcaagca gtgtggtctt gacatcacgc 480

<210> 1073
<211> 420
<212> nucleic acid
<213> Zea mays

<400> 1073

cccacgcgtc cgcaagatct cacagggcgg cctgcagaga atctatgaga agtacaggtg 60

gaagctctac tccgagaggc tgatgaccct gaccggcgtg tacgggttct ggaagtacgt 120

gagcaacctg gagaggcgcg agacccgccg ctacatcgag atgttctacg ccctgaagta 180

ccgtagcctg gcaagccagg ttccgctgtc cttcgattag tacggggaaa gaaggagaag 240

aagaagaaga agcccaggcc ggagaaccat cgcctgcatt tcgatctgtt tcaccgcaat 300

tcgcattgtt agtcgtgtat tggagttatg tgtacttggt ttccaagaac tttggttcct 360

tgttttttt tctttcttgt ttgagcgttt ttgggcagcg ctggcctggt tcctagtatg 420

<210> 1074
<211> 394
<212> nucleic acid
<213> Zea mays

<400> 1074

actgcgacct ctactggaag aagtttgagt tatcacttcc acttctcgtg ccagttcacc 60

ggtgacggtg attgcaatga accatgccga cttcatcatc accagtacct tccaagagat 120

cgccggaaac aaggacaccg tcggccagta cgagtcacac atggcgttca caatgcctgg 180

cctgtaccgc gttgtccacg gcattgatgt gttcgacccc aagttcaaca tcgtgtctcc 240

tggcgcggac ctgtccatct actttccgta caccgagtcg cacaagaggc tgaccttcct 300

tcacccggag attgaagagc ttctgtacag ccaaaccgag aacacggagc acaagttccg 360

ttctgaacga caggaacaag ccaatcattt tttc 394

<210> 1075
<211> 403
<212> nucleic acid
<213> Zea mays

<400> 1075

cccgtacacc gagtcgcaca agaggctgac ctcccttcac ccggagattg aggagctcct 60

gtacagccaa accgagaaca cggagcacaa gttcgttctg aacgacagga acaagccaat 120

catcttctcc atggctcgtc tcgaccgtgt gaagaacttg actgggctgg tggagctgta 180

cggccggaac aagcggctgc aggagctggt gaacctcgtg gtcgtctgct gcgaccatgg 240

caacccttcc aaggacaagg tggagcaggc cgagttcaag aagatgtttg acctcatcga 300

gcattacaac ctgaacgggc acattcgttg gatcttcgcc catatgaact cgcgtccgta 360

acggcgagct gttccgttac atttgctaca ccaaggtctc tag 403

<210> 1076
<211> 353
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (59)
<223>

<400> 1076

ctgacgcatg ggcacgtttg ccggatcgta ctgcgggccg gccgagatca tcgtgcgcng 60

ggtgtctagc ggcggcatgg acccttacca gggctacaag gcgtcggccc tgctcgtgga 120

cttcttcgac aagtgccagg cggacccgag ccactggagc aagatctccc atggcgggct 180

ccagcgtatc gaggagaagt acacctggaa gctctactcg gagaggctga tgaccctcac 240

cggcgtgtac gggttctgga agtacgtgtc caacctggag aggcgcgaga cccgacggta 300

cctggagatg ctgtacgcgc tcaagtaccg caccatggcg agcaccgtgc cgc 353

<210> 1077
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1077

acgaacgttc ggcctgactg tgatcgagtc catgacgtgc ggtctgccaa cgatctgtac 60

cggccatggt ggccctgctg agatcatcgt ggacggggta tctggcctgc acattgaccc 120

ttaccacagc gacaaggccg cggatatcct ggtcaacttc tttgacaaat gcaaggcaga 180

tccgagctac tgggacaaga tctcacatgg cggcctgcag agaatctatg agaagtacac 240

ctggaatctc tac 253

<210> 1078
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1078

cttttccctt tccggtggcg aattttttgt agtctgcttt tgctaggcgg cgggcgttcg 60

ttgctgctct ttgcttcaag agttaaattt acctaccttg tcaaggtctt gttccatcat 120

tgatccgggt gtcgctttta gtagtctgat ggactgttag tagtttgcgt tgcgtcggtt 180

gagagggaac ggtggtggtg gtggtgtgtg tgcagtcggg tgtggtgctc cctttgtttc 240

ctggatggga tgttgctcct tgaataataa tcgtagtggc cttggagccc ttttcctg 298

<210> 1079
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 1079

ccttgttgcg tgtttgctcg cccacaagat gggtgttact cactgtacca ttgcccaggc 60

ggttgagaaa actaagtagc ctaactccga cctctactgg aagaagtttg aggatcacta 120

ccacttctcg tgccagttca ccactgactt gattgcaatg aaccatgccg acttcatcat 180

caccagtacc ttccaagaga tcgccggaaa caaggacacc gtccgccaat acgagtcaca 240

catggcgttc acaatg 256

<210> 1080
<211> 151
<212> nucleic acid
<213> Zea mays

<400> 1080

gcctggtcga gatgtacggc aagaactctc gcctgaggga gctggcgaac ctcgtgagcg 60

ttgccggcga ccacggcaag gagtccaagg acagggagga gcaggcggag ttcaagaaga 120

tgtacagcct catcgacgag tccaagttga a 151

<210> 1081

<211> 208
<212> nucleic acid
<213> Zea mays

<400> 1081

atcgttcgca agtggatctc gcgatttgaa gtctggccgt acctggagac ttacactgat 60

gacgtggcgc atgagattgc tggagagctt caagccaatc ctgacctgat catcggaaac 120

tacagtgacg gaaaccttgt tgcgtgtttg ctcgcccaca agatgggtgt tactcactgt 180

accattgccc atgcgcttga aaaactaa 208

<210> 1082
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 1082

cggacgcgtg ggcggacgcg tggggtttac tacccgtata cggaaaccga caagagactg 60

actgccttcc atcctgaaat cgaggagctc atctacagcg acgtcgagaa ctccgagcac 120

aagttcgtgc tgaaagacaa gaagaagccg atcatcttct cgatggggcg tcttgacccc 180

gtgaagaaca tgacaaggct gggcgagatg tacggcaaga acccgcgcct gaaggagctg 240

<210> 1083
<211> 393
<212> nucleic acid
<213> Zea mays

<400> 1083

gaggagctgg cgaacctcgt gatcgttgcc ggtgaccacg gcaaggagtc caagggcagg 60

gatgagcagg cggagttcaa gaagatgtac agcctcatcg acgagtacaa gttgaagggc 120

catatccggt ggatctcggc gcagatgaac cgcgttcgca acggggaact gtaccgctac 180

atttgcgatt cgaaaggcgc atttcgtgcc agctgcgttc ttcgaaacgg tcgggctgac 240

tgggatcgaa tccatgacgt gcggtctgcc aacgatcgcg accttccatg gtgggccctc 300

tgaaaatatc gtggactggg tatttggcct ggacattgac cctttccaca gcgacaaggc 360

cttggatatt ccggttaacg tttttgacca atg 393

<210> 1084

<211> 318
<212> nucleic acid
<213> Zea mays

<400> 1084

gggatgttgc tccttgaata ataatcgtag tggccttgga gcccttttcc tgaaataaga 60

gcagcatcct agtgcttcac tttgcaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 120

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 180

aaaaaaaaaa aaaaaaaaag ggaatcaaat caaaaatatc aaaacttaaa aaaattaata 240

agaaataaaa aaaatatact aatgattaac caaaataaaa acaaatatca atttattaaa 300

aactcaaaca aggaaaaa 318

<210> 1085
<211> 451
<212> nucleic acid
<213> Zea mays

<400> 1085

agcagacatg agtgtgtact acccgtatac ggaaaccgac tagagactca ctgccttcca 60

tcctgaaatc gaggagctca tctacagcga cgtcgagaac tccgagcaca agttcgtgct 120

gaaggacaag aagaagccga tcatcttctc gatggcgcgt ctcgaccgcg tgaagaacat 180

gacaggcctg gtcgagatgt acggcatgaa cgcgcgcctg agggagctgg cgaacctcgt 240

gatcgttgcc ggtgaccact gcaaggagtc caaggacagg gaggagcagg cggagttcaa 300

gaagatgtac agcctcatcg acgagtacaa gttgaagggc catatccggt ggatctcggc 360

gcagatgaac cgcgtccgca acggggagct gtaccgctac atttgcgata cgaagggcgc 420

attcgtgcag cctgcgttct acgaagcgtt c 451

<210> 1086
<211> 351
<212> nucleic acid
<213> Zea mays

<400> 1086

gctagctctc tgttgaccat tgcgtattct gaaccatcga gccatggctg ccaagcgtac 60

tggcctccac agtcttcgcg aacgccttgg tgccaccttc tcctcccatc ccaatgaact 120

gatagcactc ttttccaggt atgttcacca gggcaaggga atgcttcagc gccatcagct 180

gcttgcggag tttgatgccc tgtttgatag tgacaaggag aagtatgcac cctttgaaga 240

cattcttcgt gctgctcacg aagcaattgt gctccccca tgggttgcac ttgctatcag 300

gccaaggcct cgtgtctggg attacattcg ggtgaatgta agtgagcttg c 351

<210> 1087
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 1087

gcacgaggcc aggcgacgag cgccggtcgg tcgtcgccat cgacggcggc ctgttcgagc 60

actacgccga gttcaggaag cgcctggagg ccacgctggt ggagctgctc ggggaggagg 120

cgtctaggct ggtggaggtc aagctcacca aggacgggtc tggcctcgga gccgccctca 180

ttgcagctgc ccactcgcag tactgaacgc ccaacggccg 220

<210> 1088
<211> 313
<212> nucleic acid
<213> Zea mays

<400> 1088

cggagatgcg cgccggactg cgcaggacgg cggcagcaag atcaagatga tcgtctcctt 60

cgtcgacaac ctccccacgg ggaacgaaga gggcgtcttc tacgccttgg accttggcgg 120

aacgaacttc cgcgtgctgc gcgtgcagct ggccgggaag gacaggcgtg tgtgcaagcg 180

agagtccaag gaggtgtcca tccctcctca cctcatgtca ggcaacgcat cggagctgtt 240

tggcttcatc gcctcggcgc tagctaagta cgtcgccgcg gcgggcgaaa gggacggcaa 300

gcagagagag ctc 313

<210> 1089
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1089

gttcatctcc atgccgacct gactcggact cttgatttgc tcctcgcggg ggttcggtcc 60

catggcggca gctgcgctgg caatggcaga gcaggtggtg gccgagctcc gagtgaggtg 120

tgagacgccg ccgtcgatgc tgcgcgaggt ggccgtggag atggcccgcg agatgggcgc 180

ggggctggag aaggacggcg ggagcagggt caagatgctc ctctcctacg tcgataagct 240

ccccacaggg agagaggaag gattattcta tggattgacc ctaggaggaa cgaatttccg 300

cgtcttgaaa gtgc 314

<210> 1090
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1090

ctcgcttcag tcttaggtat ttttatgtct ctctttttatt tcgagagttg cctgttccat 60

atggaaaaaa aaaacgagag ttaatgctga tcaaacagac gttgctgctg cgtttggcat 120

tcaggactcc ggacatctcc gcgatgcacc atgacggcac gcctgacctg agagtcgtgg 180

cggagaagct ggccgacaac ctcagggtca gggacacgtc cttggacacg aggaagatgg 240

tggtcgagat ctgcgacatc gtcaccggga ggtctgcccg gctggc 286

<210> 1091
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1091

cttacaaact ctggtggcat ggtagtaaac atggaatggg gcagtttctg gtcatcacat 60

ttgccaagaa ctccttatga catctccctt gatgatgaga cacaaaaccg caatgatcag 120

gggtttgaga aaatggtctc tgggatttat cttggggaaa ttgcaaggct ggtgctgcat 180

cgaatggctc tagaatcaga ttttcttggt gacgctgctg ataatctatg taccccccttc 240

acattgagca caccactcct cgctgcaatt c 271

<210> 1092
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1092

caaagacaaa ttgctaggtg actttagcca acaaaggact gtagttgcta ttgacggtgg 60

cctatacgag cactacaaga agttcagtgc ctgcctagag gcgacgctca cagacctgct 120

cggcgaggag gttgcctcat cggttgttgt caagttggcc aacgacggct caggaattgg 180

agctgcactt cttgctgctt cgcactccca gtatgctgaa gctgcatagt tctaggagct 240

cgggggtcct agtgtaacct tttttt 266

<210> 1093
<211> 307
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (283)
<223>

<400> 1093

ccgcgatgca ccatgacggc acgcctgacc tgagagtcgt ggcggagaag ctggccgaca 60

acctcagggt cagggacacg tccttggaca cgaggaagat ggtggtcgag atctgcgaca 120

tcgtcaccgg gacgtctgca cggctggccg cggcggggat cgtcgggatc ctcaggaaga 180

tcggtcgagc ggcgccaggc gacgagcgcc ggtacgtcgt cgcgatcgac ggcggcctgt 240

tcgagcacta cgccgagttc agggaagcgc ctgtagccac gcntagtgag ctgctcgggg 300

gagagcg 307

<210> 1094
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1094

cccacgcgtc cgcccacgcg tccggataaa tccttagact tcgaaagttt gaaccctggt 60

gagcagatat atgaaaagat gatttctgga atgtatcttg gagaaattgt ccggaggatc 120

ctgctgaaac tggctcatga tgcttcattg tttggggatg ttgttcctcc gaaactggaa 180

cagctattta tactgaggac gccagatatg tcagccatgc accatgacac ctcacatgat 240

ctcaaacacc tgggagctaa 260

<210> 1095
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1095

gaagataggc cgggacaaag taccaagcag tggcagtaaa atgccaagga ctgtaattgc 60

cttggatggt gggctctatg agcattacaa gaagttcagc agctgcgtcg aagcaactct 120

tacagacttg ctcggcgaag aggcctcttc ctccgtggtt gccaagctgg ccaacgatgg 180

ctctggcatt ggagctgctc tccttgcagc ctcacactcc cagtatggcg agagtgacta 240

gtcttgaaaa ccggtgtgga tcgaacttcg agtgtag 277

<210> 1096
<211> 206
<212> nucleic acid
<213> Zea mays

<400> 1096

gcagcatatg tggagcatgc aaatgcaatt cctaaatgga cggggttact gcctaaatct 60

ggaaacatgg taattaatac ggaatgggga agctttaaat ccggcaagct tcctctctca 120

gaatacgaca aagccatgga ctttgaaagt ttgaaccctg gagagcagat atacgaaaaa 180

atgatctctg gcatgtatct gggaga 206

<210> 1097
<211> 343
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (79),(167),(228),(231),(233)...(235),(277),(313),(321)
<223> unsure at all n locations

<400> 1097

ggcattagtc aatgatacag tgggcacatt ggctggtggg agatatatgg ataccgatgt 60

agttgcagct gtaatattng gcactggtac aaatgcagca tatgtggagc atgcaaatgc 120

aattcctaaa tggactgggt tactgcctaa atctggaaag atggtantta atacagagtg 180

ggggagcttc aaatccaaca aacttcctct ttcagaatat gacaaagnca ncnnncttga 240

aagtttgaac ctggagagca gatattacga gaaatgnttc tggtatgtac tcggagagat 300

tgttcgaaga atntactgaa ntggccatga gctctctatt ggg 343

<210> 1098
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1098

gggtttttga ttgaagatgt ggttgggaaa gatgtggctc aatgcttaaa tgaagctctt 60

gctaggagtg gactaaatgt gcgagttact gcactggtga atgacactgt ggggacgtta 120

gctctaggtc attatcacga tgaggataca gtggctgctg tgataatcgg tgctggcacc 180

aatgcttgct atatcgaacg cactgatgca attattaaat gtcagggtct tcttacaaac 240

tctggtggca tggttgt 257

<210> 1099
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1099

gactagatgt acggtagtag ctcggaatcg gctgagcaaa acctgggcgc taagctgaag 60

gacattcttg gggttcctga tacttctctg gacgcaagat acatcactct tcatgtgtgc 120

gaccttgtcg cagagagaag tgcacgcctg gctgctgctg gtatatatcg tattctgaag 180

aagctgggta aagacaaatt gctaggtgac tgatacaaac aaaggactgt agttgctatt 240

gacggtggcc tatacgagca ctacaagaag ttcagtgcct gcctag 286

<210> 1100
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 1100

gaaacatctg atctgaagat tgtggccgaa aattttgaac aaaacctaga gattacaggc 60

acatccttgg aggctcgtaa gctggtcgtt gaaatctgtg acattgtggc gacaagagca 120

gcccggctgg ctgctgcggg gcttgcaggg atcctcatga agatcgggag agatcacagc 180

gtcgaggacc aacggtcagt catcgccatc gacggaggac tgttcgagca ctacaccaaa 240

ttccgccggt gctt 254

<210> 1101
<211> 303
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (61)
<223>

<400> 1101

tctcccttga tgatgagacg caaaatcgca atgatcaggg gtttgaaaaa atgatatctg 60

nggatttatc ttggggaaat tgcaaggctg gtgctgcatc gaatggctct agaatcagat 120

gtctttggtg atgccgctga taatctatca accccttcac attgagcaca ccacttctgg 180

ctgcaattcg caaggacgat tcaccagatc tgagcgaagt cagaaggata ttgcaagacc 240

atctgaagat accggacact cctctgacaa ctcggaagct agtcgtcaaa gtctgcgaca 300

tcg 303

<210> 1102
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1102

gtttgttgac gatgatgaga agtgcgctaa catttcgaat ggcaagaagc gagatctagg 60

gttcacgttt tcgttcccag tgaagcagcg ttctgtagct tccggtacgc ttgtcaagtg 120

gacaaaggca ttttccatta atgatgctgt aggcgaagat gtggtggctg aactgcaaac 180

agccatggag aagcaaggtc tggacatgca tgtagctgca ttgattaatg atgctgttgg 240

gacgctggcg ggagcaaggt act 263

<210> 1103
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1103

ctttgttgac gatgatgaga agtgcgctaa catttcgaat ggcaagaaga cgagtctagg 60

gttcacgttt tcgttcccag tgaagcagcg ttctgtagct tccggtacgc ttgtcaagtg 120

gacaaaggca ttttccatta atgatgctgt aggcgaagat gtggtggctg aactgcaaac 180

agccatggag aagcaaggtc tggacatgca tgtagctgca ttgattaatg atgctgttgg 240

gacgctggcg ggagcaaggt actacgacaa 270

<210> 1104
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1104

gcgtcgagga ccaacggtca gtcatcgcca tcgacggagg actgttcgag cactacacca 60

aattccgccg gtgcttggag accacactgg gtgagctgct aggagacgag gcgtccaagg 120

cggtggccat caagcatgcc gatgacggct caggaatagg tgctgccctg attgcagctt 180

cacagtctca gtacaaaaac gacttagtgg ccgtcaagca tgcagatgac ggttcaggag 240

tcaagtatgc agaagacaag cgtgcagatg acggttcag 279

<210> 1105
<211> 349
<212> nucleic acid
<213> Zea mays

<400> 1105

tggcgacaag agcagcccgg ctggctgctg cggggcttgc agggatcctc atgaagatcg 60

ggagagatca cagcgtcgag gaccaacggt cagtcatcgc catcgacgga ggactgttcg 120

agcactacac caaattccgc cggtgcttgg agaccacact gggtgagctg ctaggagacg 180

aggcgtccaa ggcggtggcc atcaagcatg ccgatgacgg ctcaggaata ggtgctgccc 240

tgattgcagc ttcacagtct cagtacaaaa acgacttagt ggccgtcaag catgcaatga 300

cggttcagga gtcaagtatg cagaagacaa gcgtgcagat gacggttca 349

<210> 1106
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 1106

ctttcgtgtc atccgggtcc aacttggcgg aagggacaga cgtgtcgtga agccacagta 60

tgaagaggtc tccattccgc ctcatcttat ggttggaact tctacggaac tatttgattt 120

cattgctgct gagttggaaa aatttgtgcg gactgaagga gaagatttcc acctaccaga 180

tagcaagcag agggaactgg gtttcacctt ttctttccca gtgcaccaaa catctatatc 240

atcggggact ctaattaagt ggaccaaagg attttgcatc aatggcacgg ttggagaaga 300

tgttgtggct gaattgagta gggccatgga aaggcagg 338

<210> 1107
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1107

agcagaggga actgggtttc accttttctt tcccagtgca ccaaacatct atatcatcgg 60

ggactctaat taagtggacc aaaggatttt gcatcaatgg cacggttgga gaagatgttg 120

tggctgaatt gagtagggcc atggaaaggc agggtcttga tatgaaagtt gcagctctgg 180

ttaatgatac tgtaggcaca ttggctggtg ggagatatgc tgataatgat gttgttgctg 240

ctgtaatatt gggcactggc aca 263

<210> 1108
<211> 119
<212> nucleic acid
<213> Zea mays

<400> 1108

gatttccacc taccagatgg caagcagagg gaactgggtt tcaccttttc tttcccagtg 60

caccaaacat ctatatcatc ggggactcta attaagtgga ccaaaggctt ttgcatcaa 119

<210> 1109
<211> 277
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (236)...(237)

<223> unsure at all n locations

<400> 1109

caggaacact catcaagtgg acaaagggct tttccatcaa tggcacggtt ggtgaagatg 60

ttgtttctga gttgagcagg gccatggaga ggcagggact agatatgaaa gctacggcat 120

tagtcaatga tacagtgggc acattggctg gtgggagata tatggatacc gatgtagttg 180

cagctgtaat attgggcact ggtacaaatg cagcatatgt ggagcatgca aatgcnnttc 240

ctaaatggac tgggttactg cctaaatctg gaaagat 277

<210> 1110
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 1110

tgttgatact gaaggtgaag atttccacct cccagagggt aggcagagag aacttggttt 60

cacgttttcc ttcccagtga accaaacatc aatatcatca ggaacactca tcaagtggac 120

aaagggtttt tccatcaatg gcacggttgg tgaagatgtt gtttctgagt tgagcagggc 180

catggagagg cagggactag atatgaaagt tacggcattg gtcaatgata cagttggcac 240

at 242

<210> 1111
<211> 250
<212> nucleic acid
<213> Zea mays

<400> 1111

ggaagggaga aacgtgttgt caaacaacag tacgaggagg tttccattcc accgcatttg 60

atggtcggga cttccattga actatttgat ttcattgctg ctgcattggc taaatttgtt 120

gatactgaag gtgatgattt ccacctccca gagggtaggc agagagaact tggtttcacg 180

ttttccttcc cggtgaacca aacatcaata tcatcaggaa cactcatcat ttggacaaag 240

ggcttttcca 250

<210> 1112
<211> 330
<212> nucleic acid
<213> Zea mays

<400> 1112

cggaggaaca aactttagag tgctgaaagt tgaagttggt gatgggtctg tggtcactcg 60

ccgtaaggtc gagcttccca tccctgagga attgattaag ggtacaattg aggagttatt 120

caactttgtt gccgtgaccc taaaggagtt cgtagaagca gaagatggta aagacgaaca 180

aagggcactt ggtttcacat tttctttccc agtcagacaa acatcagtat cttcagggtc 240

cttaattagg tggaccaaag ggtttttgat tgaagatgtg gttgggaaag atgtggctca 300

atgcttaaat gaagctcttg ctaggagtgg 330

<210> 1113
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1113

gaacgaagag ggcgtcttct acgccttgga ccttggcgga acgaacttcc gcgtgctgcg 60

cgtgcactcg ccgggaaaga caggcgtgtg gccaagcgag actccaagga ggtgtccatc 120

cctcctcacc tcatgtcagg caacgcgtcg gagctgtttg gcttcatcgc ctcggcgcta 180

gctaagtacg tcgccgcggc gggcgaaggg gacggcaggc agagagagct cgggttcacc 240

ttctctttcc ccgtgcgcca gacgtcgatc gcgtcaggca cgctcatca 289

<210> 1114
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1114

cgagagtcca aggaggtgtc catccctcct cacctcatgt caggcaacgc atcggagctg 60

tttggcttca tcgcctccgc gctagccaag tacgtcgccg cggcgggcga aggggacggc 120

aggcagagag agctcgggtt caccttctct ttccccgtgc gccagacgtc gatcgcgtca 180

ggcacgctca tcaagtggac caaggcgttt tcggtcgacg acgctgttgg tgaggatgtc 240

gtcgccgagc tgcagacggc catggagaag caaggcgtcg acatgcgtgt ggcgg 295

<210> 1115
<211> 277

<212> nucleic acid
<213> Zea mays

<400> 1115

cggctcgagg gcaacgcatc ggagctgttt ggcttcatcg cctcggcgct agcaagtacg 60

tcgccgcggc gggcgaaggg gacggcaggc agagagagct cgggttcacc ttctctttcc 120

ccgtgcgcca gacgtcgatc gcgtcaggca cgctcatcaa gtggaccaag gcgttttcgg 180

tcgacgatgc tgttggtgag gatgtcgtcg ccgagctgca gacggccatg gagaagcaag 240

gcgtcgacat gcgtgtggcg gcactgatca acgatac 277

<210> 1116
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1116

aggcgtgtgg ccaagcgaga ctccaaggag gtgtccatcc ctcctcacct catgtcaggc 60

aacgcgtcgg agctgtttgg cttcatcgcc tcggcgctac caagtacgtc gccgcggcgg 120

gcgaacggga cggcaggcag agagagctcg ggttcacctt ctctttcccc gtgcgccaga 180

cgtcgatcgc gtcaggcacg ctcatcaagt ggaccaaggc gttttcggtc gacgacgctg 240

ttggtgagga tgtcgtcgcc gagctgcaga cggcc 275

<210> 1117
<211> 261
<212> nucleic acid
<213> Zea mays

<400> 1117

ttctcatctc atctccccat cactgaatga tcaagaatta gataaggaga gcttaaatcc 60

aggagaacag atttacgaga agttaacgtc aggaatgtat ttaggtgaaa ttgtaaggag 120

ggtgctcctt aaaatatcat tgcagtccgc catttttggt gatattgacc acactaagct 180

tcaaacccat ttccttctgc ggactccaca tatttcagca atgcaccatg acgaaacatc 240

tgatctgaag attgtggccg a 261

<210> 1118
<211> 267

<212>	nucleic acid
<213>	Zea mays

<400>	1118

cccacgcgtc cgcccattcc atgttgatga ccatgtctcc tgaatggggc agctcacccct	60

cccattttgg aatatgatca agaattagat aaggagagct taaatccagg agaacagatt	120

tacgagaagt taacgtcagg aatgtattta ggtgaaattg taaggagggt gctccttaaa	180

atatcattgc agtccgccat ttttggtgat attgaccaca ctaagcttca aacccatttc	240

cttctgcgga ctccacatat ttcagca	267

<210>	1119
<211>	296
<212>	nucleic acid
<213>	Zea mays

<400>	1119

tgtcaagtgg acaaaggcat tttccattaa tgatgctgta ggcgaagatg tggtggctga	60

actgcaaaca gccatggaga agcaaggtct ggacatgcat gtagctgcat tgattaatga	120

tgctgttggg acgctggcgg gagcaaggta ctacgacaaa gatgttgtcg ctggtgtaat	180

atttggcact ggcacaaacg cagcatatgt tgagaaggca aatgctattc caaaatggga	240

gggtgagctg ccccattcag gagacatggt catcaacatg gaatggggta acttct	296

<210>	1120
<211>	307
<212>	nucleic acid
<213>	Zea mays

<400>	1120

caaagatgtt gtcgctggtg taatatttgg cactggcaca aacgcagcat atgttgagaa	60

ggcaaatgct attccaaaat gggagggtga gctgccccat tcaggagaca tggtcatcaa	120

catggaatgg ggtaacttct tctcatctca tctccccatc actgaatatg atcaagaatt	180

agataaggag agcttaaatc caggagaaca gatttacgag aagttaacgt caggaatgta	240

tttaggtgaa attgtaagga gggtgctcct taaaatatcg atgcagtccg ccatttttgg	300

tgatatt	307

<210> 1121
<211> 197
<212> nucleic acid
<213> Zea mays

<400> 1121

agatgttgtc gctggtgtaa tatttggcac tggcacaaac gcagcatatg ttgagaaggc 60

aaatgctatt ccaaaatggg agggtgagct gccccattca ggagacatgg tcatcaacat 120

ggaatggggt aacttcttct catctcatct ccccatcact gaatatgatc aagaattaga 180

taaggagagc ttaaatc 197

<210> 1122
<211> 170
<212> nucleic acid
<213> Zea mays

<400> 1122

atttggagat gttgttccaa ctaagctgga gcagccattt atattgagga cgccagatat 60

gtcagccatg catcatgact cttcgcatga cctcaaaact cttggatcta aactgaagga 120

tatagttggg gtcgcagata cttccctgga agtaagatac attactcgtc 170

<210> 1123
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1123

ggcacattgg ctggtgggag atatgctgat aatgatgttg ttgctgctgt aatattgggc 60

actggcacaa atgcagctta tgtggaacat gcaaatgtga ttcctaaatg gaccgggctg 120

ctacctagat cagggaacat ggtaatcaac atggagtggg gaaacttcag atcagataaa 180

cttccaaggt cggagtatga taaatcctta gacttcgaaa gtttgaaccc tggtgagcag 240

atatatgaaa agatgatttc tggaatgtat cttggagaaa ttgtccggac gatcctgctg 300

aaactg 306

<210> 1124
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 1124

ggcacattgg ctggtgggag atatgctgat aatgatgttg ttgctgctgt aatattgggc 60

actggcacaa atgcagctta tgtggaacat gcaaatgtga ttcctaaatg gaccgggctg 120

ctacctagat cagggaacat ggtaatcaac atggagtggg gaaacttcag atcagataaa 180

cttccaaggt cggagtatga taaatcctta gacttcgaaa gtttgaaccc tggtgagcag 240

atatatgaaa agatgatttc tggaatgtat cttggagaaa ttgtccggag gatcctgctg 300

aaactggc 308

<210> 1125
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1125

cccacgcgtc cgattggctg gtgggagata tgctgataat gatgttgttg ctgctgtaat 60

attgggcact ggcacaaatg cagcttatgt ggaacatgca aatgtgattc ctaaatggac 120

cgggctgcta cctagatcag ggaacatggt aatcaacatg gagtggggaa acttcagatc 180

agataaactt ccaaggtcgg agtatgataa atccttagac ttcgaaagtt tgaaccctgg 240

tgagcagata tatgacaaga tgatttctgg aatgtatctt ggagaaattg tccggacgat 300

cctgctgaaa ctggc 315

<210> 1126
<211> 442
<212> nucleic acid
<213> Zea mays

<400> 1126

gcagtttctg gtcatcacat ttgccaagaa ctccttatga catctccctt gatgatgaga 60

cacaaaaccg caatgatcag gtgaacaccc tgtgcaaatc atgttatgta atagttgtac 120

cttttgttag tattgccgaa caaatttgac attgatgcag ggtttgaga aaatggtctc 180

tgggatttat cttggggaaa ttgcaaggct ggtgctgcat cgaatggctc tagaatcaga 240

ttttttggt gacgctgctg ataatctatg tacccccttc acattgagca caccactcct 300

cgctgcaatt cgcaaggacg attcaccaga tctgagcgaa gtcaggaaga tactgcaaga 360

acatctgaag gtcagctttc ctgaccttca tgaagtcaaa catgtgtttt cctccaacct 420

gtgaaggttc tggtgatttt gc 442

<210> 1127
<211> 436
<212> nucleic acid
<213> Zea mays

<400> 1127

ctgaaaactc gaaggctggt tgtcaaagtg tgcgacatcg tcacccggag agctgcccgg 60

ctagccgccg ctggtattgt cgggatactg aaaaagctcg gccgtgatgg gagcggtgtt 120

gcttcaagcg ggagaacggg agggcagatg aggcggacgg tggttgccat cgagggtggg 180

ctgtacgagg gctacccggt gttcagggag tacctagacg aagccctggt ggagatcttg 240

ggggaggagg tggcgcggac ggtggcgctg agggtgacag tggatgggtc tggggccggc 300

gctgccctcc ttgccgccgt acattcgtcg aatagacagc aaggttccat atagggagaa 360

gggaagatgg tgatacagcc ccctctgtgc aaatgtaaaa aggaacatta tttgatatct 420

atattcatat atatat 436

<210> 1128
<211> 443
<212> nucleic acid
<213> Zea mays

<400> 1128

caaacaacag tatgaggagg tttccattcc accacatttg atggtcggga cttccatggg 60

actatttgat ttcattgctg ctgcattggc taaatttgtc ggtactgaag gtgaagattt 120

ccaactccca gagggtagac agagagaact tggtttcact ttttccttcc cggtgaacca 180

aacatcaata tcatcaggaa cactcatcaa gtggacaaag ggcttttcca tcaatggcac 240

ggttggtgaa gatgttgatt ctgagttgag cagggccatg gagaggcagg ggctagatat 300

gaaagttacg gcattagtca atgatacagt cggcacattg gctggtggga gatatatgga 360

taccgatgta gttgcagctg taatattggg cactggtaca aatgcagcat atgtggagca 420

tgcatatgca attcctaaat ggg 443

<210> 1129
<211> 419
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (377),(392),(403)
<223> unsure at all n locations

<400> 1129

ggcgaggatg acgagctcct ttctgaacta aaagataagt gggatgcaat ggagaacagg 60

tcctctcttg ccttgtatgg tgctggagca atcctcgctg tctggatatc cttggttgta 120

gtgagatctc tcgactctgt cccgttgctc ccaggcatat tggagctagt cgggctcagc 180

tactctggat ggtttgtgta ccgatacctg ctttttcagg aaaaccggaa agaattggcc 240

ggtgttatcg atgatataaa gagaaggatt gttggcgatg atgaatagct gtttcctggt 300

ttgtaattct atttatctcg ccctgtttgg ttctgaggaa ttgaaaaata atccaatggt 360

gaagtgagaa agcactntct agttattggt tntaattcat ggngtccaaa caggctcct 419

<210> 1130
<211> 430
<212> nucleic acid
<213> Zea mays

<400> 1130

cggaggaaca aactttagag tgttaagagt tgaagttggt gctgggtctg tggtcacccg 60

tcggaaggtt gaacttccca tccctgagga attgaccaag ggtacaattg aggagctatt 120

caactttgtt gccatgactc taaaggaatt tgtagaaaca gaagatggga acgatgaaca 180

acgagcgctt ggtttcacat tttctttccc agttagacaa acatcagtat cttcggggtc 240

attgattagg tggaataaag ggtttttgat tgaagatgcg gttgggaaag atgtggctca 300

atgcttaaat gaagctcttg ctaggaatgg actaaatgtg cgagttactg cactggtgaa 360

tgacaccgtg gggacattag ctctaggaca ttatcacgat gaggatacag tggctgctgt 420

gatcattggt 430

<210> 1131
<211> 356
<212> nucleic acid

<213> Zea mays

<400> 1131

ggacctcaaa gcgaagtggg acgccgttga ggacaagccc accgtcctct tgtacggcgg 60

cggcgccgtc gtcgccctct ggctgacgtc cgtggtcgtg ggcgccatca acgccgtgcc 120

gctgctcccc aagatcctgg agctcgttgg gctcggctac accggctggt tcgtgtaccg 180

ctaccttctc ttcaaggaaa gcaggaaaga gttggccgcc gacattgaga ccttgaagaa 240

aaaaatagct ggaacagaat aaacgctcat ggaaagtttt agagcgtcct ttcttctttg 300

gaaagagatc tattcgatcg gagaaccaat gcaactactt gagtactatt attgcc 356

<210> 1132
<211> 440
<212> nucleic acid
<213> Zea mays

<400> 1132

cgccgctccg cgctccgccc tcctccctcg gcgcagcgtc tgccagcttc gcttccaagg 60

ggcaccgagg ctctccctgc tccgtgcgaa ggccgcttcc gaggacacat cggcctccgg 120

cgacgagttg atcgaggacc tcaaagcgaa gtgggacgcc gttgaggaca agcccaccgt 180

cctcttgtac ggcggcggcg ccgtcgtcgc cctatggctg acgtccgtgg tcgtgggcgc 240

catcaacgcc gtgccgctgc tccccaagat cctggagctc gttgggctcg gctacaccgg 300

ctggttcgtg taccgctacc ttctctttaa ggaaagcagg aaagagttgg ccgccgacat 360

tgagaccttg aagaaaaaaa tagctggaac agaataaacg ctcatggaaa gttttagagc 420

gtcctttctt ctttggaaag 440

<210> 1133
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1133

aatccgtggc gctcctcggc ggcgcgcgcc ttcccgccgc tccgcgctcc gccctcctcc 60

ctcggcgcag cgtctgccag cttcgcttcc aagatgcacc gaggctctcc ctgctccgtg 120

cgaaggccgc ttccgaggac acatcggcct ccggcgacga gttgatcgag gacctcaaag 180

cgaagtggga cgccgttgag gacaagccca ccgtcctctt gtacggcggc ggcgccgtcg 240

tcgccctttg gctgacgtcc gtggtcgtgg gcgccatcaa cgccgtgccg ctgctcccca 300

agatcctgga gctcgttggg ctcggctaca ccggctggtt cgtgtaccgc taccttctct 360

tcaaggaaag caggaaagag ttggccgccg acattgagac cttgaagaaa aaaatagctg 420

g 421

<210> 1134
<211> 420
<212> nucleic acid
<213> Zea mays

<400> 1134

ggttctgtag cttccggtac gcttgttaag tggacaaagg cattttccat taatgatgct 60

gtaggcgaag atgtggtggc tgaactgcaa acagccatgg agaagcaagg tctggacatg 120

catgtagctg cattgattaa tgatgctgtt gggacgctgg cgggagcaag gtactacgac 180

aaagatgttg tcgctggtgt aatatttggc actggcacaa acgcagcata tgttgagaag 240

gcaaatgcta ttgcaaaatg ggagggtgag ctgccccatt caggagacat ggtcatcaac 300

atggaatggg gtaacttctt ctcatctcat cttcccatca ctgaatatga tcaagaatta 360

gataaggaga gcttaaatcc aggagaacag atttacgaga agttaacgtc aggaatgtat 420

<210> 1135
<211> 420
<212> nucleic acid
<213> Zea mays

<400> 1135

agggccatgg aaaggcaggg tcttgatatg aaagttgcag ctctggttaa tgacactgta 60

ggcacattgg ctggtgggag atatgctgat aatgatgttg ttgctgctgt aatattgggc 120

actggcacaa atgcagctta tgtggaacat gcaaatgcga ttcctaaatg gaccgggctg 180

ctacctagat cagggaacat ggtaatcaac atggagtggg gaaacttcag atcagataaa 240

cttccaaggt cggagtatga taaatcctta gacttcgaaa gtttgaaccc tggtgagcag 300

atatatgaaa agatgatttc tggaatgtat cttggagaaa ttgtccggag gatcctgctg 360

aaactggctc atgatgcttc attgtttggg gatgttgttc ctccgaaact ggaacagcta 420

<210> 1136
<211> 107
<212> nucleic acid
<213> Zea mays

<400> 1136

cggacactgg gcgagacgcg tgggtgaagt ttcggcgaga tgttgataga cttcgtgccc 60

accgtggcgg gggtctcgct agcggaagtg ccggccttac tcaaggc 107

<210> 1137
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 1137

gcgcccacct cctctgctct ctcctctccc ccacctctgc gtccgtgcgt tgtgtttgtt 60

taggcggcaa ccgcgatgcg caatggcggc cgggcgagag ctggtggtga gtttcggcga 120

gatgttgata gacttcgtgc ccaccgtggc gggggtctcg ctggcggagg cgccgggctt 180

cctcaaggcg cccggtggcg cgcccgctaa cgtcgccatc gtggtctcgc 230

<210> 1138
<211> 240
<212> nucleic acid
<213> Zea mays

<400> 1138

cgacgtcgtc ataactggcg cctctatgag tcggcggact gctgccgctg cggcgtccaa 60

caacctggtg gtgtcgttcg gcgagatgct gatcgacttc gtccccgacg tggccgtgct 120

gtcgctggcc gagtcgggcg gcttcgtcaa ggcacccggc ggcgcgcccg ccaacgtcgc 180

ctgcgccatc gccaagctcg gcggatcctc cgccttcgta ggcaagttcg gcgacgacga 240

<210> 1139
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1139

cggaccgtgg cgtcaacgtc gccaaggacg actccatctt ccacaacgag gagggagccg 60

acgaaggcgt cgccggcgcc ggtggtgtcg acggtgtcga ccttgaagcc gggcacgctg 120

cccttgaagt ccttggtgaa gtacctgcat cccttgtccc cgtcggtgac gacgagcagc 180

ttgagcccgt caaaccacag ggacagcacg ttctcacgcg cgaggtcgtg cccggcatga 240

tcgtcaccgg gatggaggtc gcagagatcg acggcgcccc gaggatgggc ccgacgttcg 300

<210> 1140
<211> 183
<212> nucleic acid
<213> Zea mays

<400> 1140

catgtactac cgcaacccca gcgctgacat gctcctcacc gccgacgagc tcaacgtcga 60

gctcatcaag aggagtgcgg tcttccacta cggatcaata agcttgattg ctgagccttg 120

ccggacagca catctccgtg ccatggagat tgccaaagag gcaggtgcac agctctctta 180

tga 183

<210> 1141
<211> 339
<212> nucleic acid
<213> Zea mays

<400> 1141

cttcaaagta caacaagttg atacaactgg cgcaggtgac gcgttcgttg gtgctctgct 60

ccaaaggatc gttaaagatc catcctcgct acaagatgag aagaagcttg tggagtcgat 120

taaattcgct aacgcgtgcg gagcgtccac caccacgaag aagggggcga tcccgtcgct 180

gcccaccgaa gcggaggtct tgcagctaat agagaaggct tagatcatca tcgtcctgta 240

cgccatggtt ttcaccagct tctacttctt cgaattgtat tggattctga tatggaacag 300

aagaagaagc ggctgcccca tcttaccagc cctttttgt 339

<210> 1142
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1142

gcgacgacga gttcggccgc atgctcgccg ccatcctccg cgacaacggc gtcgacgacg 60

gcggcgtcgt cttcgactcc ggcgcgcgca ccggctcgcc ttcgtcaccc tgcgcgccga 120

cggggagcgc gagttcatgt tctaccgcaa ccccagcgct gacatgctcg tcaccgccga 180

cgagctcaac gtcgagctca tcaagagggc tgcggtcttc cagtacggat cagtaagctt 240

gattgctgag ccttgccgga cagcacatct ccgtgccatg gagattgcca aacaggcagg 300

tgcactgctc 310

<210> 1143
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1143

cgacgagttc ggccgcatgc tcgtcgctat cctccgcgac aacggcgtcg acgacggcgg 60

cgtcgtcttc gactccggcg cgcgcaccgc gctcgccttc gtcaccctgc gcgccgacgg 120

ggagcgcgag ttcatgttct accgcaatcc cagcgctgac atgctcctca ccgccgacga 180

gctcaacgtc gagctcatca agagggctgc ggtcttccac tacgga 226

<210> 1144
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1144

atccatcctc gctacaagac gagaagaagc ttgtagagtc tattaaattc gctaatgcgt 60

gtggagcaat caccgccacg aagaagggtg cgatcccgtc tttgcccact gaaactgagg 120

tcttgcagct aatagagaag gcatagatag atcactgtaa ttgctttggt tttcactagc 180

ttccacttct gcaaattgca aaatgtattg tattctgatc tggaacagaa gaagtgggtg 240

ctccatctta cctgccattt 260

<210> 1145
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 1145

cccacgcgtc cgcaataagc ttgattgctg agccttgccg gacagcacat ctccgtgcca 60

tggagattgc caaagaggca ggtgcactgc tctcttatga cccaaacctg agggaggcac 120

tatggccatc ccgtgaggag gcccgcaccc agatcttgag catctgggac caggcagaca 180

ttgtcaaggt cagcgaagtc gagctcgagt tcttgacagg catcgactcg gtggaggacg 240

atgttgtcat gaagctgtgg cggcctacca tgaagctgct cctagtgact cttggagatc 300

aagggtgcaa gtactatgcc agggattt 328

<210> 1146
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1146

cttgattgct gagccttgcc ggacagcaca tctccgtgcc atggaaattg ccaaagaggc 60

tggtgcactg ctctcttacg acccaaacct gagggaggca ctttggccat cccgtgagga 120

ggcccgcacc cagatcttga gcatctggga ccaggcagat atcgtcaagg tcagcgaagt 180

cgagcttgag ttcttgacag gcatcaactc agtggaggac gatgttgtca tgaagctgtg 240

gcgacctacc atgaagctgc tcctggtgac tcttggagat caaggatgca agtactatac 300

cagggatttc catg 314

<210> 1147
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1147

ccggacagca catctccgtg ccatggagat tgccaaagag gcaggtgcac tgctctctta 60

tgacccaaac ctgagggagg cactatggcc atcccgtgaa gaggcccgca cccagatctt 120

gagcatctgg gaccaggcag acattgtcaa ggtcagcgaa gtcgagctcg agttcttgac 180

aggcatcgac tcggtggagg acgatgttgt catgaagctg tggcggccta ccatgaagct 240

gctcctagtg actcttggag atcaagggtg caagtactat gccagg 286

<210> 1148
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1148

cggacgcgtg gtggagattg ccaaagaggc aggtgcactg ctctcttatg acccaaacct 60

gaggacggca ctatggccat cccgtgagga ggcccgcacc cagatcttga gcatctggga 120

ccaggcagac attgtcaagg tcagcgaagt cgagctcgag ttcttgacag gcatcgactc 180

ggtggaggac gatgttgtca tgaagctgtg gcggcctacc atgaagctgc tcctagtgac 240

tcttggagat caagggtgca agtactatgc ca 272

<210> 1149
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1149

agctcaacgt cgagctcatc aagagggctg cggtcttcca ctacggatca ataagcttga 60

ttgctgagcc ttgccggaca gcacatctcc gtgccatgga gattgccaaa gaggcaggtg 120

cactgctctc ttatgaccca aacctgaggg aggcactatg gccatcccgt gaggaggccc 180

gcacccagat cttgagcatc tgggaccagg cagacattgt caaggtcagc gaagtcgagc 240

tcgagttctt gacaggcatc gactcggtgg aggacgatgt tgtcat 286

<210> 1150
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1150

gcggtctttc actacggatc aataagcttg attgctgagc cttgccggac agcacatctc 60

cgtgccatgg aaattgccaa agaggctggt gcactgctct cttacgaccc aaacctgagg 120

gaggcacttt ggccatcccg gaggaggccc gcacccagat cttgagcatc tgggaccagg 180

cagatatcgt caaggtcagc gaagtcgagc ttgagttctt gacaggcatc aactcagtgg 240

aggacgatgt tgtcatgaag ctg 263

<210> 1151
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1151

aggtggagga cgatgttgtc atgaagctgt ggcggcctac catgaagctg ctcctagtga 60

ctcttggaga tcaagggtgc aagtactatg ccagggattt ccatggcgct gtgccttcct 120

tcaaagtaca acaagttgat acaactggcg caggtgacgc gttcgttggt gctctgctcc 180

aaaggatcgt taaagatcca tcctcgctac aagatgagaa gaagcttgtg gagtcgatta 240

aattcgctaa cgcgtgcgga gcgatcacca ccacgaagaa gggggcgatc tcgtcgc 297

<210> 1152
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1152

caggcatcga ctcggtggag gacgatgttg tcatgaagct gtggcggcct accatgaagc 60

tgctcctagc gactcttgta gatcaagggt gcaagtacta tgccagggat ttccatggcg 120

ctgtgccttc cttcaaagta caacaagttg atacaactgg cgcaggtgac gcgttcgttg 180

gtgctctgct ccaaaggatc gttaaagatc catcctcgct acaagatgag aagaagcttg 240

tggagtcgat taaattcgct aacgcgtgcg gagcgatcac caccacgaag aag 293

<210> 1153
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1153

atcgactcgg tggaggacga tgttgtcatg aagctgtggc ggcctaccat gaagctgctc 60

ctagtgactc ttggagatca agggtgcaag tactatgcca gggatttcca tggcgctgtg 120

ccttccttca aagtacaaca agttgatcaa ctggcgcagg tgacgcgttc gttggtgctc 180

tgctccaaag gatcgttaaa gatccatcct cgctacaaga tgagaagaag cttgtggagt 240

cgattaaatt cgctaacgcg tgcggagcga tcaccaccac gaagaa 286

<210> 1154
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1154

gagaagaagc ttgtggagtc gatggatctt taacgatcct ttggagcaga gcaccaacga 60

acgcgtcacc tgcgccagtt gtatcaactt gttgtacttt gaaggaaggc acagcgccat 120

ggaaatccct ggcatagtac ttgcaccctt gatctccaag agtcactagg agcagcttca 180

tggtagaccg taacagcttc atgacaacat cgtcctccac cgagtcgatg cctgtcaaga 240

actcgagctc gacttcgctg accttgacaa tgtctg 276

<210> 1155
<211> 276
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (109)
<223>

<400> 1155

agctcaacgt cgagctcatc aagagggctg cggtcttcca ctacggatca ataagcttga 60

ttgctgagcc ttgccggaca gcacatctcc gtgccatgga gattgccana gaggcaggtg 120

cactgctctc ttatgaccca aacctgaggg aggcactatg gcaatcccgt gaggaggccc 180

gcaccagatc ttgagcatct gggacaggca gacattgtca aggtcaacga gtcgagctcg 240

agtcttgaca ggatcgactc ggtggaggcg atgttg 276

<210> 1156
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 1156

agcacatctc cgtgccatgg agattgccaa agaggcaggt gcactgctct cttatgaccc 60

aaacctgagg gaggcactat ggccatcccg tgaggaggcc cgcacccaga tcttgagcat 120

ctgggaccag gcagacattg tcaaggtcag cgaagtcgag ctcgagttct tgacaggcat 180

cgactcggtg gagtacgatt ttgtcatgaa gctggggcgg cctaccatga 230

<210> 1157
<211> 294

<212> nucleic acid
<213> Zea mays

<400> 1157

gtcgcctgcg ccatcgccaa gctcggcgga tcctccgcct tcgtaggcaa gttcggcgac 60

gacgagttcg ggcacatgct ggtgaacatc ctgaagcaga acaacgtgaa ctcggagggg 120

tgcctgttcg acaagcacgc gcggacggcg ctggccttcg tgacgctcaa gcacgacggg 180

gagcgcgagt tcatgttcta caggaacccg agcgcggaca tgctgctgac ggaggcggat 240

ctggacctgg gcctggtgcg gcgcgccagg gtgttccact acggctccat ctcg 294

<210> 1158
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1158

gcctgttcga caagcacgcg cggacggcgc tggccttcgt gacgctcaag cacgacgggg 60

agcgcgagtt catgttctac aggaacccga gcgcggacat gctgctgacg gaggcggagc 120

tggacctggg cctggtgcgg cgcgccaggg tgttccacta cggctccatc tcgctcatct 180

ccgagccgtg ccgctcggcg cacatggccg ccatgcgcgc agccaaggcg gcgggcgtgc 240

tctgctccta cgaccccaac gtgcgcctcg cgctctggcc gtcagccgac agcgcacgc 299

<210> 1159
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1159

aggtacttca ccaaggactt caagggcagc gtgcccggct tcaaggtcga caccgtcgac 60

accaccggcg ccggcgacgc cttcgtcggc tccctcctcg tcaacgtcgc caaggacgac 120

tccatcttcc acaacgagga gaagctccgc gaggctctca agttctccaa cgcctgcggc 180

gccatctgca ccaccaagaa gggcgccatc ccggcgctgc ccacggtcgc caccgcccag 240

gacctcatcg ccaag 255

<210> 1160
<211> 326

<212> nucleic acid
<213> Zea mays

<400> 1160

ccgcacgcga gggcatcctc agcatctgga aggaggccga cttcatcaag gtcagcgacg 60

acgaggtggc cttcctcacg cgcggggacg ccaacgacga gaagaacgtg ctgtccctgt 120

ggtttgacgg gctcaagctg ctcgtcgtca ccgacgggga caagggatgc aggtacttca 180

ccaaggactt caagggcagc gtgcccggct tcaaggtcga caccgtcgac accaccggcg 240

ccggcgacgc cttcgtcggc tccctcctcg tcaacgtcgc caaggacgac tccatcttcc 300

acaacgagga gaagctccgc gaggcc 326

<210> 1161
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1161

cggcgctggc cttcgtgacg ctcaagcacg acggggagcg cgagttcatg ttctacagga 60

acccgagcgc ggacatgctg ctgacggagg cggagctgga cctgggcctg gtgcggcgcg 120

ccagggtgtt ccactacggc tccatctcgc tcatctccga gccgtgccgc tcggcgcaca 180

tagccgccat gcgcgcagcc aaggccgcgg gcgtgctctg ctcctacgac cccaacgtgc 240

gcctcgcgct ctggccgtcg cccgacgccg cacgcgaggg catcctcagc atctgga 297

<210> 1162
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 1162

caagctgctc gtcgtcaccg acggggacaa gggatgcagg tacttcacca aggacttcaa 60

gggcagcgtg cccggcttca aggtcgacac cgtcgacacc accggcgccg gcgacgcctt 120

cgtcggctcc ctcctcgtca acgtcgccaa ggacgactcc atcttccaca acgaggagaa 180

gctccgcgag gctctcaagt tctccaacgc ctgcgtggcc atctgcacca ccaag 235

<210> 1163
<211> 347

<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (10)
<223>

<400> 1163

tcctacgacn ccaacgtgcg cctcccgctc tggccgtcgc ccgacgccgc acgcgagggc 60

atcctcagca tctggaagga ggccgactac atcaaggtca gcgacgacga ggtggccttc 120

ctcacgcgcg gggacgccaa cgacgagaag aacgtgctgt ccctgtggtt tgacgggctc 180

aagctgctcg tcgtcaccga cggggacaag ggatgcaggt acttcaccaa ggacttcaag 240

ggcagcgtgc ccggcttcaa ggtcgacacc gtcgacacca ccggcgccgg cgacgccttc 300

gtcggctcac tcctcgtcaa cgtcgccaag gacgactcca tcttcca 347

<210> 1164
<211> 262
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (216)
<223>

<400> 1164

gatgctcgtc gtcaccgacg gggacaaggg atgcaggtac ttcaccaagg acttcaaggg 60

cagcgtgccc ggcttcaagg tcgacaccgt cgacaccacc ggcgccggcg acgccttcgt 120

cggctccctc ctcgtcaacg tcgccaagga cgactccatc ttccacaacg aggagaagct 180

ccgcgaggct ctcaagttct ccaacgcctg cgaggncatc tgcaccacca agaagggcgc 240

catcccggcg ctgcccacgg tc 262

<210> 1165
<211> 291
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (11),(17),(215),(221),(277),(290)

<223> unsure at all n locations

<400> 1165

gaacgtgctg nccctgnggt ttgacgggct caagctgctc gtcgtcaccg acggggacaa 60

aggatgcagg tacttcacca aggacttcaa gggcagcgtg cccggcttca aggtcgacac 120

cgtcgacacc accggcgccg gcgacgcctt cgtcggctcc ctcctcgtca acgtcgccaa 180

ggacgactcc atcttccaca acgaggagaa gctcnggatg ntctcaagtt ctccaacgcc 240

tgcggcgcca tctgcaccac caagaagggc gccatcncgg cgctgcccan g 291

<210> 1166
<211> 371
<212> nucleic acid
<213> Zea mays

<400> 1166

cggcggactg gacctgggcc tggtgcggcg cgccaggtgt tccactacgg ctccatctcg 60

ctcatctccg agccgtgccg ctcggcgcac atggccgcca tgcgcgcacc aaggccgcgg 120

gcgtgctctg ctcctacgac cccaacgtgc gcctcccgct ctggccgtcg cccgacgccg 180

cacgcgaggg catcctcagc atctggaagg aggccgactt catcaaggtc agcgacgacg 240

aggtggcctt cctcacgcgc ggggacgcca acgacgagaa gaacgtgctg tccctgtggt 300

ttgacgggct caagctgctc gtcgtcaccg acggggacaa gggatgcagg tagcttcacc 360

aagacttcaa g 371

<210> 1167
<211> 310
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (281)
<223>

<400> 1167

gtcgtccccg acgtggccgg gctgtcgctg gccgagtcgg gcggcttcgt caaggcaccc 60

ggcggcgcgc ccgccaacgt cgcctgcgcc atcgccaagc tcggcggatc ctccgccttc 120

gtaggcaagt tcggcgacga cgagttcggg cacatgctgg tgaacatcct gaagcagaac 180

aacgtgaacg cggacgggtg cctgttcgac aagcacgcgc ggacggcgct ggggttcgtg 240

acgctcaagc agtacgggga gcgcgagttc atgttctaca ngaacccgag cgacgacatg 300

ctgctgacgg 310

<210> 1168
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1168

cccacgcgtc cgtcgacaag cacgcgcgga cggcgctggc cttcgtgacg ctcaagcacg 60

acggggagcg cgagttcatg ttctacagga acccgagcgc ggacatgctg ctgacggagg 120

cggagctgga cctgggcctg gtgcggcgcg ccagggtgtt ccactacggc tccatctcgc 180

tcatctccga gccgtgccgc tcggcgcaca tggccgccat gcgcgcagca aggccgcggg 240

cgtgctctgc tcctacgacc ccaacgtgcg cctcgcgctc 280

<210> 1169
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1169

cccacgcgtc cgcccacgcg tccggatgca ggtacttcac caaggacttc aagggcagcg 60

tgcccggctt caaggtcgac accgtcgaca ccaacggcgc cggcgacgcc ttcgtcggct 120

ccctcctcgt caacgtcgcc aaggacgact ccatcttcca caacgaggag aagctccgcg 180

aggctctcaa gttctccaac gcctgcagcg ccatctgcac caccaagaag ggcgccatcc 240

cggcgctgcc cacggtcgcc accgcccagg acctcatcgc caaggccaac tagatggccg 300

cacaccccgc c 311

<210> 1170
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1170

cgaggtggcc ttcctcacgc gcggggacgc caacgacgag aagaacgtgc tgtccctgtg 60

gtttgacggg ctcaagctgc tcgtcgtcac cgacggggac aagggatgca ggtacttcac 120

caaggacttc aagggcagcg tgcccggctt caaggtcgac accgtcgaca ccaccggcgc 180

cggcgacgcc ttcgtcggct ccctcctcgt caacgtcgcc aaggacgact ccatcttcca 240

caacgaggag aagctccgcg aggccc 266

<210> 1171
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1171

acttcaccaa ggacttcaag ggcagcgtgc ccggcttcaa ggtcgacacc gtcgacacca 60

ccggcgccgg cgacgccttc gtcggctccc tcctcgtcaa cgtcgccaag gacgactcca 120

tcttccacaa cgaggagaag ctccgcgagg ctctcaagtt ctccaacgcc tgcagcgcca 180

tctgcaccac caagaagggc gccatcccgg cgctgcccac ggtcgctacc gcccaggacc 240

tcatcgccaa ggccaactag atggccgcac gc 272

<210> 1172
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1172

aaggacttca agggcagcgt gcccggcttc aaggtcgaca ccgtcgacac caccggcgcc 60

ggcgacgcct tcgtcggctc cctcctcgtc aacgtcgcca aggacgactc catcttccac 120

aacgaggaga agctccgcga ggccctcaag ttctccaacg cctgcgggcc atctgcacca 180

ccaagaaggg cgccatcccg gcgctgccca cggtcgccac cgcccaggac ctcatcgcca 240

aggccaacta gatggccgca cgccccgccg ttcca 275

<210> 1173
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1173

gaagaacgtg ctgtccctgt ggtttgacgg gctcaagctg ctcgtcgtca ccgacgggga 60

caagggatgc aggtacttca ccaaggactt caagggcagc gtgcccggct tcaaggtcga 120

caccgtcgac accaccggcg ccggcgacgc cttcgtcggc tccctcctcg tcaacgtcgc 180

caaggacgac tccatcttcc acaacgagga gaagctccgc gaggccctca agttctccaa 240

cgcctgcgtg gccatctgca ccaccaagaa gggcgccatc ccggcgctgc ccacggtcgc 300

<210> 1174
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1174

cgctcaagca cgacggggag cgcgagttca tgttctacag gaacccgagc gcggacatgc 60

tgctgacgga ggcggagctg gacctgggcc tggtgcggcg cgccagggtg ttccactacg 120

gctccatctc gctcatctcc gagccgtgcc gctcggcgca catggccgcc atgcgcgcag 180

caaggccgcg ggcgtgctct gctcctacga ccccaacgtg cgcctcccgc tctggccgtc 240

gcccgacgcc gcacgcgagg gcatcctcag catctgg 277

<210> 1175
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1175

gagcagcgtg cccggcttca aggtcgacac cgtcgacacc accggcgccg gcgacgcctt 60

cgtcggctcc ctcctcgtca acgtcgccaa ggacgactcc atcttccaca acgaggagaa 120

gctccgcgag gctctcaagt tctccaacgc ctgcgaggcc atctgcacca ccaagaaggg 180

cgacacaccg gcgctgccca cggtcgccac cgcccaggac ctcatcgcca aggccaacta 240

gatggccgca cgccccgccg ttccaccacg tcactgtcc 279

<210> 1176
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1176

gcgagggcat cctcagcatc tggaaggagg ccgacttcat caaggtcagc tacgacgagg 60

tggccttcct cacgcgcggg gacgccaacg acgagaagaa cgtgctgtcc ctgtggtttg 120

acgggctcaa gctgctcgtc gtcaccgacg gggacaaggg atgcaggtac ttcaccaagg 180

acttcaaggg cagcgtgccc ggcttcaagg tcgacaccgt cgacaccacc ggcgccggcg 240

acgccttcgt cggctccctc ctcgtcaacg tcggcaagga cgactccatc tt 292

<210> 1177
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 1177

aaggacttca agggcagcgt gcccggcttc aaggtcgaca ccgtcgacac caccggcgcc 60

ggcgacgcct tcgtcggctc cctcctcgtc aacgtcgcca aggacgactc catcttccac 120

aacgaggaga agctccgcga ggccctcaag ttctccaacg cctgcgggcc atctgcacca 180

ccaagaaggg cgccatcccg gcgctgccca cggtcgccac cgcccaggac ctcatcgcca 240

aggccaacta gatggccgca cgccccgccg ttccaccacg tcactgtc 288

<210> 1178
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1178

cccacgcgtc cgacgagttc gggcacatgc tggtgaacat cctgaagcag aacaacgtga 60

acgcggaggg gtgcctgttc gacaagcacg cgcggacggc gctggccttc gtgacgctca 120

agcacgacgg ggagcgcgag ttcatgttct acaggaaccc gagcgcggac atgctgctga 180

cggaggcgga gctggacctg ggcctggtgc ggcgcgccag ggtgttccac tacggctcca 240

tctcgctcat ctccgagccg tgccgctcgg cg 272

<210> 1179
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 1179

gtgaactcgg aggggtgcct gttcgacaag cacgcgcgga cggcgctggc cttcgtgacg 60

ctcaagcacg acggggagcg cgagttcatg ttctacagga acccgagcgc ggacatgctg 120

ctgacgaagg cgaacctgaa cttgggcttg ttccgcgcgc caaggtgttc cactacggct 180

ccatctcggt catcttcgag ccgtgccgct cggcgaaaat ggccg 225

<210> 1180
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 1180

gccgacttca tcaaggtcag cgacgacgag gtggccttcc tcacgcgcgg ggacgccaac 60

gacgagaaga acgtgctgtc cctgtggttt gacgggctca agctgctcgt cgtcaccgac 120

ggggacaagg gatgcaggta cttcaccaag gacttcaagg gcagcgtgcc cggcttcaag 180

gtcgacaccg tcgacaccac gggcgccggc gacgccttcg tcggctccct cctcgtcaag 240

gtc 243

<210> 1181
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1181

gtgctctgct cctacgaccg caacgtgcgc ctcccgctct ggccgtcgcc cgacgccgta 60

cgcgagggca tcctcagcat ctggaaggag gccgacttca tcaaggtcag cgacgacgag 120

gtggccttcc tcacgcgcgg cgacgccaac gacgagaaga acgtgctgtc cctgtggttt 180

gacgggctca agctgctcgt cgtcaccgac ggggacaagg gatgcaggta cttcaccaag 240

gacttcaagg gcagcgtggc ccgcttcaag gtcgacaccg tcgaca 286

<210> 1182
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1182

cgctcatctc cgagccgtgc cgctcggcgc acatggccgc catgcgcgca ccaaggcggc 60

gggcgtgctc tgctcctacg accccaacgt gcgcctcccg ctctggccgt cgcccgacgc 120

cgcacgcgag ggcatcctca gcatctggaa ggaggccgac ttcatcaagg tcagcgacga 180

cgaggtggcc ttcctcacgc gcggggacgc caacgacgag aagaacgtgc tgtccctgtg 240

gtttgacggg ctcaagctgc tcgtc 265

<210> 1183
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1183

cccaaggact tcaagggcag cgtgcccggc ttcaaggtcg acaccgtcga caccaccggc 60

gccggcgacg ccttcgtcgg ctccctcctc gtcaacgtcg ccaaggacga ctccatcttc 120

cacaacgagg agaagctccg cgaggccctc aagttctcca acgcctgcgg gccatctgca 180

ccaccaagaa gggcgccatc ccggcgctgc ccacggtcgc caccgcccag gacctcatcg 240

ccaaggccaa ctagatggcc gcacgccccg ccgttc 276

<210> 1184
<211> 336
<212> nucleic acid
<213> Zea mays

<400> 1184

gaacgtgctg tccctgtggt ttgacgggct caagctgctc gtcgtcacgc ggggacaagg 60

gatgcaggta cttcaccaag gacttcaagg gcagcgtgcc cggcttcaag gtcgacaccg 120

tcgacaccac cggcgccggc gacgccttcg tcggctcccc tcctcgtcaa cgtcgccaag 180

gacgactcca tcttccacaa cgaggagaag ctccgcgagg ctctcaagtt ctccaacgcc 240

tgcgtggcca tctgcaccac caagaagggc gccatcccgg cgctgcccac ggtcgcctac 300

gcccaggacc tcatcgccaa ggccaactag atggcc 336

<210> 1185
<211> 329
<212> nucleic acid
<213> Zea mays

<400> 1185

gcgcggacat gctgctgacg gaggcggact ggacctgggc ctggtgcggc gcgccacggt 60

gttccactac ggctccatct cgctcatctc cgagccgtgc cgctcggcgc acatggccgc 120

catgcgcgca ccaaggccgc gggcgtgctc tgctcctacg acttcatcaa ggtcagcgac 180

gacgaggtgg ccttcctcac gcgcggggac gccaacgacg agaagaacgt gctgtccctg 240

tggtttgacg gctcaagctg ctcgtcgtca ccgacgggga caagggatgc aggtacttca 300

ccaaggactt caagggcagc gtgcccggc 329

<210> 1186
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 1186

gccccatgcg cgcaccaagg ccgcgggcgt gctctgctcc tacgacccca acgtgcgcct 60

cccgctctgg ccgtcgcccg acgccgcacg cgagggcatc ctcagcatct ggaatgaggc 120

cgacttcatc aaggtcagcg acgacgaggt ggccttcctc acgcgcgggg acgccaacga 180

cgagaagaac gtgctgtccc tgtggtttga cgggctcaag ctgctcgtcg tcaccga 237

<210> 1187
<211> 196
<212> nucleic acid
<213> Zea mays

<400> 1187

cccacgcgtc cgcccacgcg tccgcgactt catcaaggtc agcgacgacg aggtggcctt 60

cctcacgcgc ggggacgcca acgacgagaa gaacgtgctg tccctgtggt ttgacgggct 120

caagctgctc gtcgtcaccg acggggacaa gggatgcagg tacttcacca aggacttcaa 180

gggcagcgtg cccggc 196

<210> 1188
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1188

cgtcaacgtc gccaaggacg actccatctt ccacaacgag gagaagctcc gcgaggctct 60

caagttctcc aacgcctgcg gcgccatctg caccaccaag aagggcgcca tcccggcgct 120

gcccacggtc gccaccgccc aggacctcat cgccaaggcc aactagatgg ccgcacgccc 180

cgccgttcca ccacgtcact gtcccccgcc gccccgcccc tcgtcgtcga cgtcctcggt 240

ttcggttcat taggtagatc gagtcttagc gtccgtctct gcg 283

<210> 1189
<211> 171
<212> nucleic acid
<213> Zea mays

<400> 1189

gaacaacgta tacgcggagg ggtgcctgtt cgacaagcac gcgcggacgg gctggccttc 60

gtgacgctca agcacgacgg ggagcgcgag ttcatgttct acaggaaccc gagcgcggac 120

atgctgctga cggaggcgga ctggtacctg ggcctggtgc ggcgcgccag g 171

<210> 1190
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1190

ggacgactcc atcttccaca acgaggagaa gctccgcgag gccctcaagt tctccaacgc 60

ctgcggcgcc atctgcacca ccaagaaggg cgccatcccg gcgctgccca cggtcgccac 120

cgcccaggac ctcatcgcca aggccaacta gatggccgca tgccccgccg ttccaccacg 180

tcactgtccc ccgccgcccc gcccctcgtc gtcgacgtcc tcggtttcgg ttcattaggt 240

agatcgagtc ttagcgtccg tctctgc 267

<210> 1191
<211> 201
<212> nucleic acid
<213> Zea mays

<400> 1191

ccgacttcat caaggtcagc gacgacgagg tggccttcct cacgcgcggg gacgccaacg 60

acgagaagaa cgtgctgtcc ctgtggtttg aagggctcaa gctgctcgtc gtcaccgacg 120

gggacaaggg atgcaggtac ttcaccaagg acttcaaggg cagcgtgccc ggcttcaagg 180

tcgacaccgt cgacaccacc g 201

<210> 1192
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1192

caacggcagc gtgcccggct tcaaggtcga caccgtcgac accaccggcg ccggcgacgc 60

cttcgtcggc tccctcctcg tcaacgtcgc caaggacgac tccatcttcc acaacgagga 120

gaagctccgc gaggccctca agttctccaa cgcctgcggc gccatctgca ccaccaggaa 180

gggcgccatc ccggcgctgc tgcaggtcgc caccgcccag gacctcatcg ccaaggccaa 240

ctagatggcc gcacgcaccg ccgttccacc ac 272

<210> 1193
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1193

ctgcggaggc tctcaagttc tccaacgcct gcaggccatc tgcaccacca agaagggcgc 60

catcccggcg ctgcccacgg tcgccaccgc ccaggacctc atcgccaagg ccaactagat 120

ggccgcacgc ccgccgttcc accacgtcac tgtccccctc gtcgtcgacg tcctcggttt 180

cggttcatta ggtagatcga gtcttagcgt ccgtctctgc gcctctacgc tgagacggtt 240

tgtttgggtt aattaagtta gctttcgtgg agatttcgcc ccggggcatc aaataaaatg 300

ttggcat 307

<210> 1194
<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1194

ggcggactgc tgccgcggcg gcgtccaaca acctggtggt gtcgttcggc gagatgctga 60

tcgacttcgt ccccgacgtg gccgggctgt cgctggccga gtcgggctgc ttcgtcaagg 120

cacccggcgg cgcgcccgcc aacgtcgcct gcgccatcgc caagctcggc ggatcctccg 180

ccttcgtagg caagttctgc gacgacgagt tcgggcacat gctggtgaac atcctgaagc 240

agaacaacgt gaacgcggag gggtgcctgt tcgacaagca cgcgtggacg gcgctggcct 300

tcgtga 306

<210> 1195
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1195

cgcctcgctt tcccttcccc accagcccgt ctctctcttc tctctgactc tctctctcgt 60

agccgcgtcc acctcgcagc agcaagcaag cgcgaccaaa tggcgcctct aggagacggc 120

ggagctgctg ccgcggcggc gtccaacaac ctggtggtgt cgttcggcga gatgctgatc 180

gacttcgtcc ccgacgtggc cgggctgtcg ctggccgagt cgggcggctt cgtcaaggca 240

cccggcggcg cgcccgccaa cgtcgcctgc gccatcgtca agctcggcgg atcctccgcc 300

ttcgtaggca agtt 314

<210> 1196
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 1196

cacctcgcct tcccttcccc accagccccc gtctctctct ctctctctct gtctctctct 60

cgtagccgcg tccatctcgc agcagcaagc aagcgcgacc aaatggcgcc tctaggagac 120

ggcggactgc tgccgcggcg gcgtccaaca acctggtggt gtcgttcggc gagatgctga 180

tcgacttcgt ccccgacgtg gccgggctgt cgctggccga gtcgggcggc ttcgtcaagg 240

cacccggcgg cgcgcccgcc aacgtcgcct gcgccatcgc caagctcggc ggaatctccg 300

ccttcgta 308

<210> 1197
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1197

cgtctctctc tctctctctc tgtctctctc tcgtagccgc gtccatctcg cagcagcaag 60

caagcgcgac caaatggcgc ctctaggaga cggcggagct gctgccgcgg cggcgtccaa 120

caacctggtg gtgtcgttcg gcgagatgct gatcgacttc gtccccgacg tggccgggct 180

gtcgctggcc gagtcgggcg gcttcgtcaa ggcacccggc ggcgcgcccg ccaacgtcgc 240

ctgcgccatc gccaagctcg gcggatcctc cgccttcgt 279

<210> 1198
<211> 331
<212> nucleic acid
<213> Zea mays

<400> 1198

cccacgcgtc cgcgcctcgc cttcccttcc ccaccagccc ccgtctctct ctctctctct 60

ctgtctctct ctcgtagccg cgtccatctc gcagcagcaa gcaagcgcga ccaaatggcg 120

cctctaggag acggcggagc tgctgccgcg gcggcgtcca acaacctggt ggtgtcgttc 180

ggcgagatgc tgatcgactt cgtccccgac gtggccgggc tgtcgctggc cgagtcgggc 240

ggcttcgtca aggcacccgg cggcgcgccc gccaacgtcg cctgcgccat cgtcaagctc 300

ggcggatcct ccgccttcgt aggcaagttc g 331

<210> 1199
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1199

gcctcgcctt cccttcccca ccagcccccg tctctctctc tctctctctg tctctctctc 60

gtagccgcgt ccatctcgca gcagcaagca agcgcgacca aatggcgcct ctaggagacg 120

gcggagtgct gccgcggcgg cgtccaacaa cctggtggtg tcgttcggcg agatgctgat 180

cgacttcgtc cccgacgtgg ccgggctgtc gctggccgag tcgggcggct tcgtcaaggc 240

acccggcggc gcgctcgcca acgtcgcctg cgccatcgcc aagctcggcg gatcctccg 299

<210> 1200
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1200

cgtctctctc tctcttctct ctgactctct ctctcgtagc cgcgtccacc tcgcagcagc 60

aagcaagcgc gaccaaatgg cgcctctagg agacggcgga gctgctgccg cggcggcgtc 120

caacaacctg gtggtgtcgt tcggcgagat gctgatcgac ttcgtccccg acgtggccgg 180

gctgtcgctg gccgagtcgg gcggcttcgt caaggccccc ggcggcgcgc acgccaacgt 240

cgcctgcgcc atcgccaagc tcggcggctc ctccgc 276

<210> 1201
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1201

cccacgcgtc cgcccacgcg tccgcctcgc cttcccttcc ccaccagccc ccgtctctct 60

ctctctctct ctgtctctct ctcgtagccg cgtccatctc gcagcagcaa gcaagcgcga 120

ccaaatggcg cctctaggag acggcggact gctgccgcgg cggcgtccaa caacctggtg 180

gtgtcgttcg gcgagatgct gatcgacttc gtccccgacg tggccgggct gtcgctggcc 240

gagtcgggcg gcttcgtcaa ggcacccggc ggcgcgcc 278

<210> 1202
<211> 190
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (67)
<223>

<400> 1202

gtagccgcgt ccacctcgca gcagcaagca agcgcgacca aatgggcgcc tctaggagac 60

ggcggantgc tgccgcggcg gcgtccaaca acctggtggt gtcgttcggc gagatgctga 120

tcgacttcgt ccccgacgtg gccgggctgt cgctggccga gtcgggcggc ttcgtcaagg 180

cacccggcgg 190

<210> 1203
<211> 275
<212> nucleic acid

<213>   Zea mays

<400>   1203

agcacaatcg cctcgccttc ccttccccac cagcccccgt ctctctctct cttctctctg   60

actctctctc tcgtagccgc gtccacctcg cagcagcatg caagcgcgac caaatggcgc   120

ctctaggaga cggcggagct gctgccgcgg cggcgtccaa caacctggtg gtgtcgttcg   180

gcgatatgct gatcgacttc gtccccgacg tggccgggct gtcgctggcc gagatcggcg   240

gcttcgtcaa ggcccccggt ggcgcgctcg ccaac   275

<210>   1204
<211>   316
<212>   nucleic acid
<213>   Zea mays

<400>   1204

gtctctctct tctctctgac tctctctctc gtagccgcgt ccacctcgca gcagcaagca   60

agcgcgacca gatggcgcct ctaggagacg gcggagtgct gccgcggcgg cgtccaacaa   120

cctggtggtg tcgttcggcg agatgctgat cgacttcgtc cccgacgtgg ccgggctgtc   180

gctggccgag tcgggcggct tcgtcaaggc attcggcggc gcgcccgcca acgtcgcctg   240

cgacatcgcc aagctcggcg gatcctccgc cttcgtaggc aagttcggcg acgacgagtt   300

cgggcacatg ctggtg   316

<210>   1205
<211>   247
<212>   nucleic acid
<213>   Zea mays

<400>   1205

ctctctctct cgtagccgcg tccacctcgc agcagcaagc aagcgcgact aaatggcgtc   60

tctaggagac ggtggactgc tgctgcggcg gcgtccaaca atctggtggt gtcgttcggc   120

gagatgctga tcgacttcgt ccccgacgtg gctgggctgt cgctggccga ttcgggcggc   180

ttcgtcaagg caccctgcgg cgcgctcgct aatgtcgcct tcgccatcgc caagctcggc   240

ggatcct   247

<210>   1206

<211> 418
<212> nucleic acid
<213> Zea mays

<400> 1206

cgacgagctc aacgtcgagc tcatcaagag ggctgcggtc ttccactacg gatcagggag 60

cttgattgct gagccttgcc ggacagcaca tctccgtgcc atggagattg ccaaagaggc 120

aggtgcactg ctctcttatg acccaaacct gagggaggca ctatggccat cccgtgagga 180

ggcccgcacc cagatcttga acatctggga ccaggcagac attgtcaagg tcagcgaagt 240

cgagctcgag ttcttgacaa gcatcgactc ggtggaggac gatgttgtca tgaagctgtg 300

gcggcctacc atgaagctgc tcctagtgac tcttggagat caagggtgca agtactatgc 360

cagggatttc catggcgctg tgccttcctt caaagtacaa caagttgata caactggc 418

<210> 1207
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1207

cgacgagctc aacgtcgagc tcatcaagag ggctgcggtc ttccactacg gatcaataag 60

cttgattgct gagccttgcc ggacagcaca tctccgtgcc atggagattg ccaaagaggc 120

aggtgcactg ctctcttatg acccaaacct gagggaggca ctatggccat cccgtgagga 180

ggcccgcacc cagatcttga gcatctggga ccaggcagac attgtcaagg tcagcgaagt 240

cgagctcgag ttcttgacag gcatcgactc ggtggaagac gatgttgtca tgaag 295

<210> 1208
<211> 439
<212> nucleic acid
<213> Zea mays

<400> 1208

actcggaggg gtgcctgttc gacaagcacg cgcggacggc gctggccttc gtgacgctca 60

agcacgacgg ggagcgcgag ttcatgttct acaggaaccc gagcgcggac atgctgctga 120

cggaggcgga gctggacctg ggcctggtgc ggcgcgccag ggtgttccac tacggctcca 180

tctcgctcat ctccgagccg tgccgctcgg cgcacatggc cgccatgcgc gcagccaagg 240

ccgcgggcgt gctctgctcc tacgacccca acgtgcgcct cccgctctgg ccgtcgcccg 300

acgccgcacg cgagggcatc ctcagcatct ggaaggaggc cgacttcatc aaggtcagcg 360

acgacgaggt ggccttcctc acgcgcggtg acgccaacga cgagaagaac gtgctgtccc 420

tgtggtttga cgggctcaa 439

<210> 1209
<211> 383
<212> nucleic acid
<213> Zea mays

<400> 1209

aatcgacaag cacgcgcgga cggcgctggc cttcgtgacg ctcaagcacg acggggagcg 60

cgagttcatg ttctacagga acccgagcgc ggacatgctg ctgacggagg cggagctgga 120

cctgggcctg gtgcggcgcg ccagggtgtt ccactacggc tccatctcgc tcatctccga 180

gccgtgccgc tcggcgcaca tggccgccat gcgcgcagcc aaggcggcgg gcgtgctctg 240

ctcctacgac cccaacgtgc gcctcccgct ctggccgtcg cccgacgccg cacgcgaggg 300

catcctcagc atctggaagg aggccgactt catcaaggtc agcgacgacg aggtggcctt 360

cctcacgcgc ggggacgcca acg 383

<210> 1210
<211> 451
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (439)
<223>

<400> 1210

cgacgagttc gggcacatgt tggtgaacat cctgaagcag aacattgtga actcggaggg 60

gtgcctgttc gacaagcacg cgcggacggc gctggccttc gtgacgctca agcacgacgg 120

ggagcgcgag ttcatgttct acaggaaccc gagcgcggac atgctgctga cggaggcgga 180

gctggacctg ggcctggtgc ggcgcgccaa ggtgttccac tacggctcca tctcgctcat 240

ctccgagccg tgccgctcgg cgcacatggc cgccatgcgc gcagccaagg ccgcgggcgt 300

gctctgctcc tacgacccca acgtgcgcct tccgctctgg ccgtcgcccg acgccgcacg 360

cgagggcatc ctcagcatct ggaaggaggc cgacttcatc aaggtcagcg acgacgaggt 420

ggccttcctc acgcgcggng acgccaacga c 451

<210> 1211
<211> 497
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (11)...(13)
<223> unsure at all n locations

<400> 1211

gagagttctc nnnttaagta gcttactgtc ttggtagtac tcgtaccgga tcggagtttc 60

cgaccaaacc gtccggtccg acaggacgcc tcgaccgggg ttggctttct tgccgttaag 120

ccccaacggg gacggcaagt taatgtatta caggaaccca accgcggaca tgctgtttac 180

ggaggcggag ctggacctgg gcctggtccg gtgcgccagg gtgttccact acgggtccat 240

ctcgctcatc tccgatccgt gccggtcggc gcacatggcc gacatgcgcg cagccaatgc 300

cgcgggcgtg ctctggtcct acgacctcaa cgtgcgcctt ccgctctggc cgtcgcccga 360

cgccgtacgc gagggcatcc tcagcatctg gaacgaggcc gacttcatca aggtcagcga 420

cgacgatgtg gccttactca cgcgcgggga cgccaacgac gagaagaacg tgctgtccct 480

gtggtttgac gggctca 497

<210> 1212
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1212

ctccatcttc cacaacgagg agaagctccg cgaggctctc aagttctcca acgcctgcgg 60

cgccatgtgc accaccaaga agggcgccat cccggcgctg cccacggtcg ccaccgccca 120

ggacctcatc gccaaggcca actagatggc cgcacgcccc gccgttccac cacgtcactg 180

tcccccgccg ccccgcccct cgtcgtcgac gtcctcggtt tcggttcatt aggtagatcg 240

agtcttaccg tcc 253

<210> 1213
<211> 375
<212> nucleic acid
<213> Zea mays

<400> 1213

cggactcgtg ggcggactcg tgggcggact cgtgggcgga ctcgtgggcg gactcgtggg 60

ggcgtgctct gctcctacga ccccaacgtg cgcctcccgc tctggccgtc gcccgacgcc 120

gcacgcgagg gcatcctcag catctggaag gaggccgact tcatcaaggt cagcgacgac 180

gaggtggcct tcctcacgcg cggggactcc aacgacgaga agaacgtgct gtccctgtgg 240

tttgacgggc tcaagctgct cgtcgtcacc gacggggaca agggatgcag gtacttcacc 300

aaggacttca agggcagcgt gcccggcttc aaggtcgaca ccgtcgacac caccggcgcc 360

ggcgacgcct tcgtc 375

<210> 1214
<211> 411
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (116)
<223>

<400> 1214

cccacgcgtc cgaacgagga gaagctccgc gaggctctca agttctccaa cgcctgcggc 60

gccatctgca ccaccaagaa gggcgccatc ccggcgctgc ccacggtcgc caccgnccag 120

gacctcatcg ccaaggccaa ctagatggcc gcacgcccgc cgttccacca cgtcactgtc 180

cccctcgtcg tcgacgtcct cggtttcggt tcattaggta gatcgagtct tagcgtccgt 240

ctctgcgcct ctacgctgag acggtttgtt tgggttaatt aagttagctt tcgtggagat 300

ttcgccccgg ggcatcaaat aaaatgttgg catgcgtggt gggatgctat cctttatttt 360

tattttattt tattttttag cttggatcag ttggggtttt gaacattgct a 411

<210> 1215
<211> 403
<212> nucleic acid
<213> Zea mays

<400> 1215

tcgacccctt ttgctgaaca tgcttaagcc tatcaataag tactcggagg ggtgcctgta 60

cgacaggcgc gctttgacgg cgctgggggt cctgactctc aagcacgacg gggagcgcga 120

gttcatgttc tacaggaacc cgagcgcgga catgctgctg acggaggcgg agctggacct 180

gggcctggtg cggcgcgcca aggtgttcca ctacggctcc atctcgctca tctccgagcc 240

gtgccgctcg gcgcacatgg ccgccatgcg cgcagccaaa gccgtgggcg tgctctgctt 300

ctacgacccc aacgtgcgcc ttccgctctg gccgtcgacc gacgccgcac gcgagggcat 360

actcagcatc tggaaagagg ccgacttcat caaggtcagc gac 403

<210> 1216
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1216

agctgcgaga ggtgtgaagg acgtcgtgct atgactggcc gcatgattca ttcggggcca 60

ccaggcctat gggaggcagc ccccggtacc attcgtgggg actacgccgt ggaggtcggc 120

aggaatgtca tccatggaag cgactccgtg gagaacggga tgaaggagac gctctctggt 180

tcctgaaggt gtgcacaagc gagagcacct tcatccctga tctacgaggc tgagcattga 240

gctggatgca tgctgctcat ggaaccagag tttgtgagta tatctgttgc tctgctagat 300

catattacgc ctggg 315

<210> 1217
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1217

ctttttctga atacctcaca gatccaaaaa tgtcttccga acagagtttc attgccatca 60

agcccgatgg tgtccagcgt ggcctcgttg gacccatcat ctctcgcttc gagtcccgtg 120

gcttcaagct cgccgctttg aagttggtct ctccgcctcg tgagctcctc gagaagcaat 180

atgccgacct ctccgagaag cctttcttcc ccggtctcgt tacatacatg ttgagcggcc 240

ccatcgttgc catggtctgg gagggccg 268

<210> 1218
<211> 284
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (268)
<223>

<400> 1218

cccgtccatc gcccctccct ccggtctgcg ctcccacagc ctcacccctg cgcccccgcc 60

gattcgcgtc gccctttgtt ggaaggaacg atggagcaga ccttcatcat gatcaagccc 120

gacggcgtcc agcggggcct gatcggggac atcatcagtc gcttcgagaa gaaagggttc 180

tacctcaagg ggatgaagtt catgaacgtg gagaggtcct tcgcgcacag cactacgctg 240

acctttccga caagactttc ttccccgngt tggtggagta catc 284

<210> 1219
<211> 296
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (6)
<223>

<400> 1219

tcgccncctc cctccggtct gcgctcccac agcctcaccc ctgcgccccc gccgattcgc 60

gtcgcccttt gttggaagga acgatggagc agaccttcat catgatcaag cccgacggcg 120

tccagcgggg cctgatcggg gacatcatca gtcgcttcga gaagaaaggg ttctacctca 180

aggggatgaa gttcatgaac gtggagaggt ccttcgcgca cagcactacg ctgacctttc 240

cgacaagcct ttcttccccg ggttggtgga gtacatcaat tccggccccg tggtgg 296

<210> 1220
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1220

tgtccatcgc gcctccctcc ggtctgcgct cccacagcct cacccctgcg cccccgccga 60

ttcgcgtcgc cctttgttgg aaggaacgat ggagcagacc ttcatcatga tcaagcccga 120

cggcgtccag cggggcctga tcggggacat catcagtcgc ttcgagaaga aagggttcta 180

cctcaagggg atgaagttca tgaacgtgga gaggtccttc gcgcacagca ctacgctgac 240

ctttccgaca agcctttctt ccccgggttg gtggagtaca tcatttccgg ccccgtggtg 300

gc 302

<210> 1221
<211> 372
<212> nucleic acid
<213> Zea mays

<400> 1221

cgtccatcgc gcctccctcc ggtctgcgct cccacagcct cacccctgcg cccccgccga 60

ttcgcgtcgc cctttgttgg aaggaacgat ggagcagacc ttcatcatga tcaagcccga 120

cggcgtccag cggggcctga tcggggacat catcagtcgc ttcgagaaga aagggttcta 180

cctcaagggg atgaagttca tgaacgtgga gaggtccttc gcgcacagca ctacgctgac 240

ctttccgaca agcctttctt ccccgggttg gtggagtaca tcatttccgg ccccgtggtg 300

gcgatggtgt gggaggggaa ggacgtcgtg ttgactggcc gcagatcatt ggggccacag 360

gcttgggagg ca 372

<210> 1222
<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1222

ctcctctcat aacccaccag tccatcgcac cctccctccg gtcagcgctc ccacagcctc 60

acccctgcgc ccccgccgat tcgcgtcgcc ctttgttgga aggaacgatg gagcagacct 120

tcatcatgat caagcccgac ggcgtccagc ggggcctgat cggggacatc atcagtcgct 180

tcgagaagaa agggttctac ctcaagggga tgaagttcat gaacgtggag aggtccttcg 240

cgcagagcac tacgctgacc tttccgacaa gcctttcttc tccgggttgg tggagtaca 299

<210> 1223
<211> 327
<212> nucleic acid
<213> Zea mays

<400> 1223

cggacgcgtg gcgctcccac agcctcaccc ctgcgccccc gccgattcgc gtcgcccttt 60

gttggaaaga acgatggagc agaccttcat catgatcaag cccgacggcg tccagcgggg 120

cctgatcggg gacatcatca gtcgcttcga gaagaaaggg ttctacctca aggggatgaa 180

gttcatgaac gtggagaggt ccttcgcgca cagcactacg ctgacctttc cgacaagcct 240

ttcttccccg ggttggtgga gtacatcatt tccggccccg tggtggcgat ggtgtgtgag 300

gggaagacgt cgtgtgactg gcccaga 327

<210> 1224
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1224

cccccccacc cgtccatcgc ccctccctcc ggtctgcgct cccacagcct cacccctgcg 60

cccccgccga ttcgcgtcgc cctttgttgg aaggaacgat ggagcagacc ttcatcatga 120

tcaagcccga cggcgtccag cggggcctga tcggggacat catcagtcgc ttcgagaaga 180

aagggttcta cctcaagggg atgaagttca tgaacgtgga gaggtccttc gcgcagagca 240

ctacgctgac ctttccgaca agcctttctt ccccgggttg gtgg 284

<210> 1225
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 1225

cccctccctc cggtctgcgc tcccacagcc tcacccctgc gcccccgccg attcgcgtcg 60

ccctttgttg gaaggaacga tggagcagac cttcatcatg atcaagcccg acggcgtcca 120

gcggggcctg atcggggaca tcatcagtcg cttcgagaag aaagggttct acctcaaggg 180

gatgaagttc atgaacgtgg agaggtcctt cgcgcacagc actacgctga cctttccgac 240

aagcctttct tccccg 256

<210> 1226
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1226

gagcagacct tcatcatgat caagcccgac ggcgtccagc ggggcctgat cggggacatc 60

atcagtcgct tcgagaagaa agggttctac ctcaagggga tgaagttcat gaacgtggag 120

aggtccttcg cgcacagcac tacgctgacc tttccgacaa gcctttcttc cccgggttgg 180

cgatatacat catttccggc cccgtggtgg cgatggtgtg ggaggggaag gacgtcgtgt 240

tgactggccg caggatcatt ggggccacca ggcctt 276

<210> 1227
<211> 357
<212> nucleic acid
<213> Zea mays

<400> 1227

ggaaggaacg atggagcaga ccttcatcat gatcaagccc gacggcgtcc agcgggcctg 60

atcggggaca tcatcagtcg cttcgagaag aaagggttct acctcaaggg gatgaagttc 120

atgaacgtgg agaggtcctt cgcgcagaaa gatacgctga cctttccgac aagcctttct 180

tccccgggtt ggtggagtac atcatttccg gccccgtggt ggcgatggtg tgggagggaa 240

ggacgtcgtg ttgactggcc gcaggatcat tggggccaca aggcttggga ggcagccccg 300

gtaccattcg tggggactag ccgtggaagt cggcaggaat gtcatccagg aagcgac 357

<210> 1228
<211> 279
<212> nucleic acid
<213> Zea mays

<400> 1228

atgcctcccc cacccgtcca tcgcccctcc ctccggtctg ctctcccaca gcctcacccc 60

tgcgcccccg ccgattcgcg tcgccctttg ttggaaggaa cgatggagca gaccttcatc 120

atgatcaagc ccgacggcgt ccagcggggc ctgatcgggg acatcatcag tcgcttcgag 180

aagaaagggt tctactccaa ggggatgaag ttcatgaacg tggagaggtc cttcgcgcac 240

agcactacgc tgacctttcc gacaagcttt cttccccgg 279

<210> 1229
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1229

ttttcgtcac ccctgacgct cgacgcctct cctcctctcc tcccccaccc gtccatcgcc 60

cctccctccg gtctgcgctc ccacagcctc acccctgcgc ccccgccgat tcgcgtcgcc 120

ctttgttgga aggaacgatg gagcagacct tcatcatgat caagcccgac ggcgtccagc 180

ggggcctgat cggggacatc atcagtcgct tcgagaagaa agggttctac ctcaagggga 240

tgaagttcat gaacgtggag aggtccttcg cgcacagcac tacgctgacc tttccgacaa 300

g 301

<210> 1230
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1230

tcctctcccc ccccacccgt ccatcgcccc tccctccggt ctgcgctccc acagcctcac 60

ccctgcgccc ccgccgattc gcgtcgccct ttgttggaag gaacgatgga gcagaccttc 120

atcatgatca agcccgacgg cgtccagcgg ggcctgatcg gggacatcat cagtcgcttc 180

gagaagaaag ggttctacct caaggggatg aagttcatga acgtggagag gtccttcgcg 240

cagagcacta cgctgacctt tccgac 266

<210> 1231
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1231

cggggcctga tcggggacat catcagtcgc ttcgagaaga aagggttcta cctcaaggtg 60

atgaagttca tgaacgtgga gaggtccttc gcgcacagca ctacgctgac ctttccgaca 120

agcctttctt ccccgggttg gtggagtaca tcatttccgg ccccgtggtg gcgatggtgt 180

gggaggggaa ggacgtcgtg ttgactggcc gcaggatcat tgggccacca ggccttggga 240

ggcagccccg gtaccattcg tggggat 267

<210> 1232
<211> 332
<212> nucleic acid
<213> Zea mays

<400> 1232

gtccagcggg gcctgatcgg ggacatcatc agtcgcttcg agaagaaagg gttctacctc 60

aaggggatga agttcatgaa cgtggagagg tccttcgcgc acagcactac gctgaccttt 120

ccgacaagcc tttcttcgcc gggttggtgg agtacatcat ttccgagccc gtggtggcga 180

tggtgtggga ggggaagacg tcgtgtgact gccgcagatc attggggcca cagcccttag 240

gagcagcccc ggtaccatcg tgggactagc cgtgaagtcg cagaatgcat catgaagcga 300

tcgtgagacg ggagaagagt cgtctctgtc ct 332

<210> 1233
<211> 183
<212> nucleic acid
<213> Zea mays

<400> 1233

cgcaagaacg atggagcaga ccttgatcat gatcaagcac gacggcgtcc agcggggcct 60

gatcggggac atcatcagtc gcttcgagaa gaaagggttc tacctcaagg ggatgaagtt 120

catgaacgtg gagaggtcct tcgcgcacag ctactacgct gacctgtccg acaagccttt 180

ctt 183

<210> 1234
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 1234

tgcgacccgg cgattcgcgt cgctctttgc tggaaggaac gatggagcag accttcatca 60

tgatcaagcc cgtcggcgtc cagcggggcc tgatcgggga catcatcagt cgcttcgaga 120

agaaagggtt ctacctcaac gggatgaagt tcatgaacgt ggagaggtcc ttcgcgcaca 180

gcactacgct gacctttccg acaagccttt cttccccggg ttggtggagt acatcattta 240

cggcaccgtg gtggcgatgg tgtcggaggc gaaggacgtc gt 282

<210> 1235
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1235

ctcgacgcct ctcctcctct cctatcccac acgttcatcg ccccctccct ccggtctgcg 60

ctcccacagc ctcacccctg cgcccccgcc gattcgcgtc gccctttgtt ggaaggaacg 120

atggagcaga ccttcatcat gatcaagccc gacggcgtcc agcggggcct gatcggggac 180

atcatcagtc gcttcgagaa gaaagggttc tacctcaagg ggatgaagtt catgaacgtg 240

gagaggtcct tcgcgcagag ccactacgct gacctttccg aca 283

<210> 1236
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1236

cgcctctcct cctctcctcc cccacccgtc catcgcccct ccctccggtc tgcgctccca 60

cagcctcacc cctgcgcccc cgccgattcg cgtcgccctt tgttggaagg aacgatggag 120

cagaccttca tcatgatcaa gcccgacggc gtccagcggg gcctgatcgg ggacatcatc 180

agtcgcttcg agaagaaagg gttctacctc aaggggatga agttcatgaa cgtggagagg 240

tccttcgcgc agagcactac 260

<210> 1237
<211> 260
<212> nucleic acid
<213> Zea mays

<400> 1237

cgcctctcct cctctcctcc cccacccgtc catcgcccct ccctccggtc tgcgctccca 60

cagcctcacc cctgcgcccc cgccgattcg cgtcgccctt tgttggaagg aacgatggag 120

cagaccttca tcatgatcaa gcccgacggc gtccagcggg gcctgatcgg ggacatcatc 180

agtcgcttcg agaagaaagg gttctacctc aaggggatga agttcatgaa cgtggagagg 240

tccttcgcgc acagcactac 260

<210> 1238
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1238

cgacgcctct cctcctctcc ccccccaccc gtccatcgcc cctccctccg gtctgcgctc 60

ccacagcctc acccctgcgc ccccgccgat tcgcgtcgcc ctttgttgga aggaacgatg 120

gagcagacct tcatcatgat caagcccgac ggcgtccagc ggggcctgat cggggacatc 180

atcagtcgct tcgagaagaa agggttctac ctcaagggga tgaagttcat gaacgtggag 240

aggtccttcg cgcacagcac tacgctgac 269

<210> 1239
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1239

acggcgtcca gcggggcctg atcggggaca tcatcagtcg cttcgagaag aaagggttct 60

acctcaaggg gatgaagttc atgaacgtgg agaggtcctt cgcgcacagc actacgctga 120

cctttccgac aagcctttct tccccgggtt ggtggagtac atcatttccg gccccgtggt 180

ggcgatggtg tgggaggggа aggacgtcgt gttgactggc cgcagatcat tggggcacca 240

gccttgggag gcaccccggt acattctggg gatacgccgt gaatcgcag 289

<210> 1240
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1240

ccctgacgct cgacgcctct cctcctctcc tcccccaccc gtccatcgcc cctccctccg 60

gtctgcgctc ccacagcctc acccctgcgc ccccgccgat tcgcgtcgcc ctttgttgga 120

aggaacgatg gagcagacct tcatcatgat caagcccgac ggcgtccagc ggggcctgat 180

cggggacatc atcagtcgct tcgagaagaa agggttctac ctcaagggga tgaagttcat 240

gaacgtggag aggtccttcg cgc 263

<210> 1241
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1241

ccctgacgct cgacgcctct cctcctctcc tcccccaccc gtccatcgcc cctccctccg 60

gtctgcgctc ccacagcctc accccctgcgc ccccgccgat tcgcgtcgcc ctttgttgga 120

aggaacgatg gagcagacct tcatcatgat caagcccgac ggcgtccagc ggggcctgat 180

cggggacatc atcagtcgct tcgagaagaa agggttctac ctcaagggga tgaagttcat 240

gaacgtggag aggtccttcg cgca 264

<210> 1242
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1242

ctctcctcct ctccttacac aaccgtccat cgacgctccc tccggtctgc gctcccacag 60

cctcacccct gcggtgccga tgattcgcgt cgccctttgt tggaatgacg atggagcaga 120

ccttcatcat gatcaagccc gacggcgtcc agcggggcct gatcggggac atcatcagtc 180

gcttcgagaa gaaagggttc tacctcaagg ggatgaagtt catgaacgtg cagaggtcct 240

tctcgcgaag aattagg 257

<210> 1243
<211> 313
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (55),(65),(177)
<223> unsure at all n locations

<400> 1243

ggaaggaacg atggagcaga ccttcatcat gatcaagcac gacggcgtcc agcgnggcct 60

gatcngggac atcatcagtc gcttcgagaa gaaggggtct acctcaaggg gatgaagttc 120

atgaacgtgg agaggtcttc gcgcagagca ctacgctgac ctttccgaca agccttntct 180

tcccggggtt ggtggagtac atcatttccg gccccgtggt ggcgatggtg tgggagggga 240

aggacgtcgt gttgactggc cgcagatcat tggggccacc agcttgggag gcaccccggt 300

acattcgtgg gat 313

<210> 1244
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1244

gtggagaacg ggaagaagga gatcgctctc tggttccctg aaggtgtggc acagtggaag 60

agcaaccttc atccctggat ctacgaggct tgagcagttg agcttggatg ccttgcctgc 120

tccatggaaa ccagagtttt gtttgagtat tatctgttgg ctctggctga agagtcataa 180

tttagcgctc tgtgtgttac accagagtta agtctgcctg aacttatgtg gcatttgttt 240

gagtttctgc cttcgtgccc tgttttctaa 270

<210> 1245
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1245

tagaggagat cgctctctgg ttccctgaag gtgtggcaca gtggaagagc aaccttcatc 60

cctggatcta cgaggcttga acagttgagc ttggatgact tgcctgcttc catggaaacc 120

agagttttgt ttgagtatta tctgttggct ctggctgaag agtcataatt tagcgctctg 180

tgtgttacac cagagttaag tctgcctgaa cttatgtggc atttgtttga gtttctacct 240

tcgtgccctg ttttctaatg taccgtggtt gtgaa 275

<210> 1246
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1246

actaattggt gccacagacg cacagagatc tgaaccagga accatcaggg gtgatcttgc 60

cattgttgtt ggaagagaca tcattcatgg aagtgatggc ccagagacag cgaaggatga 120

gatcgcttta tggtttgaac ccaaggactg gtctcttaca ccagcaatgc ggagaagtgg 180

atcaatttaa aagaattaac gagagagtca atctgttttt tttccttctt ttgatctcgg 240

ttttcacata attgccgaca gacctaggca c 271

<210> 1247
<211> 404
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (256)...(257),(265)
<223> unsure at all n locations

<400> 1247

aacggacgcg tgggtgcgct cccacagcct cacccctgcg cccccgccga ttcgcgtcgc 60

cctttgttgg aaggaacgat ggagcagacc ttcatcatga tcaagcccga cggcgtccag 120

cggggcctga tcggggacat catcagtcgc ttcgagagga aagggttcta ccgcaagggg 180

atgaagtgca tgaacgtgta gaggtccttc gcgcaggagc actacgcggg ggggggcggc 240

aacgcgtggg ttggcnngtg tggtngagcg ggtgattgcc ggccccgtgg gggctggggt 300

gtgggagggg aaggacgtcg tgttgactgg ccgcaggatc attggggcca ccaggccttg 360

ggaggcagcc cccggtacca ttcgtgggga ctacgccgtg gaag 404

<210> 1248
<211> 347
<212> nucleic acid
<213> Zea mays

<400> 1248

tcgcccactc gttcgtccac tctttcgcgt ccatcgcccc ctccctccgg tctgcgctcc 60

cagagcctct cccctgcgcc cccgccgatt cgcgtctccc tttgttggaa ggaacgatgg 120

agcagacctt catcatgatc aagcccgacg gcgtccagcg gcgcctgatc ggggacatca 180

tcagtcgctt cgagaagaaa gggttctacc tcaaggggat gaagttcatg aacgtggaaa 240

ggtccttcgc tcatcagcac tacgctgacc tttccgacaa gcctttcttc cccgggttgg 300

tggagtacat catttccggc cccgtggtgg cgattgtgtg ggaaggg 347

<210> 1249
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 1249

gcggagcaga ccttcatcat gatcaagccc ggcggcgtcc agcggggcct gatcggggac 60

atcagcagtc gcttcgagag gagggggttc tacctcaagg ggatgaagtt catgaacgtg 120

gagaggtcct tcgcgcagca gcactacgct gacctttccg acaagccttt cttccccggg 180

ttggtggagt acatcatttc cggccccgtg gtggcgatgg tgtgggaggg gaaggacgtc 240

gtgttgactg gccgcaggat cattggggcc accaggcctt gggaggcagc cccggtacc 300

attcgtgggg actacgccgt ggaagtcggc aagaatgtca 340

<210> 1250
<211> 464
<212> nucleic acid
<213> Zea mays

<400> 1250

cggacgcgtg ggctccccca cccgtccatc gccccctccc tccggtctgc gctcccacag 60

gctcgcccct gcgcccccgc cgattcgcgt cgccctttgt tggaaggaac gatggagcag 120

accttcatca tgatcaagcc cgacggcgtc cagcggggcc tgatcgggga catcatcagt 180

cgcttcgaga agaaagggtt ctacctcaag ggtaagtgcg tttcattttg ttctcgaatt 240

gattgctgga acacgtactc tgtttaaatt tcctagctat acgcatgaac ttctctgctg 300

ttgaggcaag atttgatgtg cagattctgg tgatatctta gaattgttta atctatgtat 360

acgttcggtt gcgtgtgatc accatctgaa aaaggatgtt ggtcgtggaa gcaggaatat 420

tgcgtggaga ttagatttga ttgaaaacca ttatcttgat gtca 464

<210> 1251
<211> 504
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (11),(32)
<223> unsure at all n locations

<400> 1251

```
cgcgggggtg ngaaacgatc attcggcgag cncggtccga actatccggg gcccagcacg    60
cgtccggagc tgtgctctgc tctgctctcg cctcgcacgg actcgtggta aaggatggag   120
accatgtcgg ctctcgcgag gacggcgccg ccccttgctg ggaccattcg ccggccctca   180
tgcgcgctga ggccgacggc gtccctctcc ttcgccgccg cttcaacgac gccccgcggc   240
cggctcgggc tggggctgag cacggcgccg gcggggagcg ggagggcggc cagggctcgc   300
gccgtcccgc ggcgcatcgt cgcctcctcg gaggttgagc aaagctacat tatgatcaaa   360
ccagatggtg ttcagcgtgg tctggttgga gagattattt ctcgctttga gaagaaaggg   420
tttttgttga aaggcttaaa acttttccag tgccccaagg acttggcgca ggagcattac   480
aaggatttga agggataaac tttc                                          504
```

<210> 1252
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 1252

```
gtttttgcag ttagtagaat atgttagtgg ctcctatgat agggtggaag gatttgagtt    60
attgaatgag gcaatctctg agtatgagac ttcagaaaac aatgactcgg gaagctaccg   120
cagattattt tatttggcat tgcctccatc agtctaccca tcagtatgcg agatgataag   180
atcatattgc atgagtccat cttcacacac cggttggaca agggttattg ttg          233
```

<210> 1253
<211> 180
<212> nucleic acid
<213> Zea mays

<400> 1253

```
tcgttcggca gcagcaacga ggtgctggat gggacgccga cgggagatgg ggcaccgggg    60
caggggcagc ggggagcgag caccgtcagc atcacggtcg tcggcgcctc cggcgacctc   120
```

gccaagaaga agatcttccc ggccctcttc gccttgttct acgagggctg gctcccggag 180

<210> 1254
<211> 137
<212> nucleic acid
<213> Zea mays

<400> 1254

cacagatctt gatagggcca ctaatgagct tgtgatacgt gtgcaaccgg atgaagcaat 60

ttacctaaag attaacaaca agattcctgg tctcggtatg cgactagata ggagtaactt 120

gaatctccat tatgccg 137

<210> 1255
<211> 272
<212> nucleic acid
<213> Zea mays

<400> 1255

ggaggacaaa cttttcggtt gggtgctgga cgactgcggg gattgctcag ttgccgaggg 60

atgccttatg gacacaaaca atgatcccat cgatgttgat gcacacatgt acaggtatca 120

tctacatgtt ttacaatata tattttttag gagttacttt taaaaaatat tagaaaaccc 180

cttctttgat attttcaatt tttttggtgg cttaaaaaaa caagaaagta aattttacaa 240

accttagaga tggtctaagt cgtccatgca ta 272

<210> 1256
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1256

cccacgcgtc cgctgatttc aggttcatat ttgatgcaat gcatgcaatt actggtgcgt 60

atgccggacc catttttgtt gagaaacttg gagctgatcc ggactgcata ttaaatgggg 120

tgcctcttga agattttgga aatggccatc cagatccaaa tctaacttac gctaaggagc 180

ttgtttttac tatgtttgga gcccatgcac ctgactttgg tgcaacaagt gatggtgatg 240

gtgatcggaa catgattctt ggga 264

<210> 1257

<211> 299
<212> nucleic acid
<213> Zea mays

<400> 1257

gtcatttacc tgttgatgga gccataatga taacagcaag ccatctcccc tacaatcgga 60

atggtctcaa gtttttttaca agtgatggtg ggctaaataa agctgatatc aaagatatcc 120

tggagcgtgc ttccaaaata tatgaggaat ctgcacataa taacctgaaa gaacaggggg 180

aagcttcgaa gggagttgtc actaatgtgg actacatgtc aatttatgct tctgatcttg 240

tacaagcagt tcgtaaatct gctggagaca aagaaaaacc attggaggaa ctgcatata 299

<210> 1258
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 1258

atctgggctg tgtctggcgt tgctttccat acttgcagac cggaacaagg ataaggatgt 60

cggagaggga ttagtgtcag ttgaagatat tgctatggag cactggaaaa cctatggcag 120

gaatttcttg tctagatacg attatgaggc gtgtgaatca cacagtgcaa accagatgat 180

ggatcacgtt agagatgtta tggcaaatag caagcctgga gagaaatacg gaaattacac 240

cc 242

<210> 1259
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 1259

cggacgcgtg gcgagacgcg tgggcttgta caagcagttc gtaaatctgc tggagacaaa 60

gaaaaaccat tggaggaact gcatatagtc gttgatgcag ggaatggtgc tggtggtttt 120

tttgtggata aggtactcaa accattagga gctgttacca ctggaagtca attccttgag 180

cctgatggtt tgtttcccaa tcacattccc aaccctgagg acaa 224

<210> 1260
<211> 304
<212> nucleic acid

<213> Zea mays

<400> 1260

gggagcctta tcagggatct gcaggagccc gccgagtccg tgctcctccg gatggacatc 60

atgggtgagc ccaaggatgc caaggaaagg gccacacatg cagttgaggc ttttaagaac 120

tacatccagg aggacaaact tttcggttgg gtgctggacg actgcgggga ttgctcagtt 180

gccgagggat gccttatgga cacaaacaat gatcccatcg atgttgatgc acacatgtac 240

agagcaaaac tatacgacga gaatcagaga gcagtaggca tggtccacat tcgtcaaagc 300

gtgc 304

<210> 1261
<211> 347
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (41),(144),(209)
<223> unsure at all n locations

<400> 1261

tgtgtgactt cagatggatt gactgtattt attgaaaata nacttggagg gaagcatcac 60

cgtttcaaac gagggtacaa gaatgtaata gacgaggcta ttcgtctgaa ctctattggt 120

gaggagtcac atttggccat gganacaagt gggcatggag cgctgaaaga gaaccactgg 180

cttgatgatg gagcatacct tatggtcana cttttgaata aacttgctgc tgctagaaca 240

ctgggttcaa gtattggtag taaagttttg actgatttgg ttgagggcct tgaagaagct 300

gatgtgacag ttgaaataag gttaaagatt gatcagaatc atgcaga 347

<210> 1262
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1262

gaattttgaa aaggtgacgg aaatagtgag gagcggagaa caccggaatg atccatcctc 60

tcgtgctatc cctgccctcc cccgctataa tatcgcgccc tcgtcgccat cgtcaccaca 120

ccaccactcc ctcactgccc tctcactccc gatccctgca ccactaccgc ctcctccgcg 180

tcacccctct cgtcgcctct tgcggcgacc ggcggcggat cgtccgctgc gctaggcaac 240

catggggctc ttcaccgtga cgaagaaggc taccacccct tcgaagg 287

<210> 1263
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 1263

cacattcgtg agaaggatgg catctgggct gtgcttgcat ggctttcaat tcttgccttc 60

aagaataagg acaaccttgg aggagataag cttgtcactg ttgaagatat tgtccgtcag 120

cactgggcca catatggtcg ccattactac acacgctatg actatgagaa tgttgatgca 180

ggggctgcta aggagcttat ggcaaaccta gtaagcatgc agtcatcact ttctgatgtt 240

aacaagttgg tcaaggagat ccggtctgat gtttctgaag tagttgcagc tgacgagttt 300

ttgtacaagg atcctgttga tggctctgtg tccaagca 338

<210> 1264
<211> 341
<212> nucleic acid
<213> Zea mays

<400> 1264

cacattcgtg agaaggatgg catctgggct gtgcttgcat ggctttcaat tattgctttc 60

aagaataagg acaaccttgg aggagataag cttgtcactg ttgaagatat tgtccgtcag 120

cactgggcca catatggtcg ccattactac acacgctatg actatgagaa tgttgatgca 180

gcttctgcta aggagcttat ggcaaaccta gtaagcatgc agtcatcact ttctgatgtt 240

aacaagttgg tcaaggagat ccggtctgat gtttctgaag tagttgcagc tgacgagttt 300

gagtacaagg atcctgttga tggctctgtg tccaagcacc a 341

<210> 1265
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1265

cgaaagagga ctttggaggt ggtcatccgg atcctaacct tacctatgca aaagagttgg 60

ttgaacgcat gggtcctgga aagtcatcct caaatgttga gcctcctgaa tttggcgctg 120

cagctgatgg agatgctgac cgcaacatga ttcttggtaa aagattcttt gtgacaccgt 180

cggactctgt tgccattatc gcagccaatg ctgttcaatc aattccttac tttgcttctg 240

gcctgaaggg agttgccagg agcatgccaa catctgctgc tcttgatgtt gttgcaaaga 300

atttgaacct taag 314

<210> 1266
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 1266

ggtcatccgg atcctaacct tacctatgca aaagagttgg ttgaacgcat gggtcttgga 60

tagtcatcct caaatgttga gcctcctgaa tttggtgctg cagctgatgg agatgctgac 120

cgcaacatga ttcttggtaa aagattcttt gtgacaccgt cggactctgt tgccattatc 180

gcagccaatg ctgttcaatc aattccttac tttgcttctg gcctgaaggg agttgccagg 240

agcatgccaa catctgctgc ccttgatgtt gttgcaaaga atttgaacct taagttcttt 300

gaggtgccta ctggatgg 318

<210> 1267
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 1267

gtcatccgga tcctaacctc acctatgcaa aagagttggt tgaacggatg ggtcttggaa 60

agtcatcctc aaatgttgaa cctcctgaat ttggtgctgc agctgatgga gatgctgacc 120

gcaacatgat tctgggtaaa agattctttg tgacaccatc ggactctgtt gccattatag 180

cggccaatgc tgttcaatca attccttact ttgcttctgg cctgaaggga gttgccagga 240

gcatgccaac atcagctgcc cttgatgttg ttgcaaagaa tttgaatctc aagttctttg 300

aggg 304

<210> 1268
<211> 298

<212> nucleic acid
<213> Zea mays

<400> 1268

gagctgatgg caaacctagt aagcatgcag tcatcacttt ctgatgttaa caagttgatc 60

aaggagatcc ggtctgatgt ttctgaagta gttgcagctg acgagtttga gtacaaggat 120

ccagttgatg gctctgtgtc caagcaccag ggcatccgat acctcttcgg agatggttca 180

cgactggtgt tccgtctatc cggaaccggt tctgttggtg ccaccatccg tgtctacatc 240

gagcaatacg agaaggattc ctccaagacc ggcagggatt cacaggaggc ccttgctc 298

<210> 1269
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 1269

gagataagct tgtcactgtt gaagatattg tccgtcagca ctgggccaca tatggtcgcc 60

attactacac acgctatgac tatgagaatg ttgatgcagg ggctgctaag gagcttatgg 120

caaacctagt aagcatgcag tcatcacttt ctgatgttaa caagttggtc aaggagatcc 180

ggtctgatgt ttctgaagta gttgcagctg acgagtttga gtacaaggat cctgttgatg 240

gctctgtgtc caagcaccag ggcatccgat acctctttgg agatggttca cgac 294

<210> 1270
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 1270

cggctcgagg gtcatccgga tcctaacctc acctatgcaa aagagttggt tgaacggatg 60

ggtcttggaa agtcatcctc aaatgttgaa cctcctgaat ttggtgctgc agctgatgga 120

gatgctgacc gcaacatgat tctgggtaaa agattctttg tgacaccatc ggactctgtt 180

gccattatag cggccaatgc tgttcaatca attccttact ttgcttctgg cctgaaggga 240

gttgccagga gcatgccaac atcagctgcc cttgatgttg ttgcaaagaa tttgaatctc 300

aagttctttg aggtgcctac tgggtgga 328

<210> 1271
<211> 285
<212> nucleic acid
<213> Zea mays

<400> 1271

ataagcttgt cactgttgaa gatattgtcc gtcagcattg ggccacatat ggtcgccatt 60

attacacacg ctatgactat gagaatgtcg atgctggggc tgctaaggag ctgatggcaa 120

acctagtaag catgcagtca tcactttctg atgttaacaa gttgatcaag gagatccggt 180

ctgatgtttc tgaagtagtt gcagctgacg agtttgagta caaggatcca gttgatggct 240

ctgtgtccaa gcaccagggc atccgatacc tcttcggaga tggtt 285

<210> 1272
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1272

gttgcaaaga atttgaatct caagttcttt gaggtgccta ctgggtggaa attttttggg 60

aatttgatgg atgctggaat gtgctcaatc tgtggtgaag aaagctttgg cactgggtct 120

gaccacattc gtgagaaaga tggcatctgg gctgtgcttg catggctttc tattattgct 180

ttcaagaata aggacaacct tggaggagat aagcttgtca ctgttgaaga tattgtccgt 240

cagcattggg ccacatatgg tcgccattat tacacacgct atga 284

<210> 1273
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1273

agtttacatt ctgttatgat gcactccatg gtgttgcggg agcttatgcc aaacacatct 60

ttgtggaaga gcttggtgct gatgaaagct cactgttgaa ttgtgtcccg aaagaggact 120

ttggaggtgg tcatccggat cctaacctta cctatgcaaa agagttggtt gaacgcatgg 180

gtcttggaaa gtcatcctca aatgttgagc ctcctgaatt tggtgctgca gctgatggag 240

atgctgaccg caacatgaat cttggtaaaa gattctt 277

<210> 1274
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1274

cccacgcgtc cgaatgtgct caatctgtgg tgaagaaagc tttggcactg ggtctgacca 60

cattcgtgag aaggatggca tctgggctgt gcttgcatgg ctttcaatta ttgctttcaa 120

gaataaggac aaccttggag gagataagct tgtcactgtc gaagatattg tccgtcagca 180

ctgggccaca tatggtcgcc attactacac acgctatgac tatgagaatg ttgatgcagg 240

ggctgctaag gagcttatgg caaacctagt aagcatgcag tcatcacttt c 291

<210> 1275
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1275

cgatgctggg gctgctaagg agctgatggc aaacctagta agcatgcagt catcactttc 60

tgatgttaac aagttgatca aggagatccg gtctgatgtt tctgaagtag ttgcagctga 120

cgagtttgag tacaaggatc cagttgatgg ctctgtgtcc aagcaccagg gcatccgata 180

cctcttcgga gatggttcac gactggtgtt ccgtctatcc ggaaccggtt ctgttggtgc 240

caccatccgt gtctacatcg agcaatacga gaagg 275

<210> 1276
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1276

ctcggactct gttgccatta tagcggccaa tgctgttcaa tcagttcctt actttgcttc 60

tggcctgaag ggagttgcca ggagcatgcc aacatcagct gcccttgatg ttgttgcgaa 120

gaatgtgaat ctcaagttct ttgaggtgcc tactgggtgg aaattttttg ggaatttgat 180

ggatgctgga atgtgctcag tctgtggtga agaaagcttt ggcactgggt ctgaccacat 240

tcgtgagaga gatggcatct gggctgtgct tgcatggctt tctattattg 290

<210> 1277
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1277

cttcgaagca ataaaaaagc tactgacctc cccaaagttt acattctgtt atgatgcgct 60

ccatggtgtt gctggagctt atgccaaaca catctttgtg gaagagcttg gtgctgatga 120

aagctcactg ttgaattgtg tcccaaaaga ggactttgga ggtggtcatc cggatcctaa 180

cctcacctat gcaaaagagt tggttgaacg gatgggtctt ggaaagtcat cctcaaatgt 240

tgaacctcct gaatttggtg ctgcagctga tggag 275

<210> 1278
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1278

tctttggaga tggttcacga ctggtgttcc gcctctctgg aaccggttct gttggtgcca 60

ccatccgtgt ctacatcgag cagtacgaga gggactcctc taagaccggc agggattcac 120

aggacgccct tgctccgctg gttgatttgc gctcaagctc tccaagatgc aagagtacac 180

tggacgctct gcccccaccg tcatcacata aattttgaag agtgttttag aatgagttga 240

ggcgcttaca caaatttcat tccggcctct tgttccatag tttttc 286

<210> 1279
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1279

ctttgtgaca ccgtcggact ctgttgccat tatcgcagcc aatgctgttc aatcaattcc 60

ttactttgct tctggactga agggagttgc caggagcatg ccaacatctg ctgcccttga 120

tgttgttgca aagaatttga accttaagtt ctttgaggtg cctactggat ggaagttttt 180

tgggaatttg atggatgctg gaatgtgctc aatctgtggt gaagaaagct ttggcactgg 240

gtctgaccac attcgtgaga aggatggcat ctgggctgtg cttgcatggc tttcaattat 300

tgctt 305

<210> 1280
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1280

cggacgctgg gtgcgtgctg cagctgatgg agatgctgac cgcaacatga ttcttggtaa 60

aagattcttt gtgacaccgt cggactctgt tgccattatc gcagccaatg ctgttcaatc 120

aattccttac tttgcttctg gcctgaaggg agttgccagg agcatgccaa catctgctgc 180

ccttgatgtt gttgcaaaga atttgaacct taagttcttt gaggtgccta ctggatggaa 240

gtttttgggg aatttgatgg atgctggaat g 271

<210> 1281
<211> 290
<212> nucleic acid
<213> Zea mays

<400> 1281

ggacaacctt ggaggagata agcttgtcac tgttgaagat attgtccgtc agcattgggc 60

cacatatggt cgccattatt acacacgcta tgactatgag aatgtcgatg ctggggctgc 120

taaggagctg ttggcaaccc tagtaagcat gcagtcatca ctttctgatg ttaacaagtt 180

gatcaaggag atccggtctg atgtttctga agtagttgca gctgacgagt ttgagtacaa 240

ggatccagtt gatggctctg tgtccaagca ccagggcatc cgatacctct 290

<210> 1282
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1282

cgtcggactc tgttgccatt atcgcagcca atgctgtggg gatcaattcc ttactttgct 60

tctggcctga agggagttgc caggagcatg ccaacatctg ctgctcttga tgttgttgca 120

aagaatttga accttaagtt ctttgaggtg cctactggat ggaagttttt tgggaatttg 180

atggatgctg gaatgtgctc aatctgtggt gaagaaagct ttggcactgg gtctgaccac 240

attcgtgaga aggatggcat ctgggctgtg cttg 274

<210> 1283
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1283

aagagcttgg tgctgatgaa agctcactgt tgaattgtgt cccaaaagag gactttggag 60

gtggtcatcc ggatcctaac ctcacctatg caaaagagtt ggttgaacgg atgggtcttg 120

gaaagtcatc ctcaaatgtt gaacctcctg aatttggtgc tgcagctgat ggagatgctg 180

accgcaacat gattctgggt aaaagattct ttgtgacacc atcggactct gttgccatta 240

tagcggccaa tgc 253

<210> 1284
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1284

gagattcttt gtgacaccgt cggactctgt tgccattatc gcagccaatg ctgttcaatc 60

aattccttac tttgcttctg gcctgaaggg agttgccagg agcatgccaa catctgctgc 120

tcttgatgtt gttgcaaaga atttgaacct taagttcttt gaggtgccta ctggatggaa 180

gtttttttggg aatttgatgg atgctggaat gtgctcaatc tgtggtcgaa gaaagctttg 240

gtactgggtc tga 253

<210> 1285
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 1285

gcagtcatca ctttctgatg ttaacaagtt ggtcaaggag atccggtctg atgtttctga 60

agtagttgca gctgacgagt ttgagtacaa ggatcctgtt gatggctctg tgtccaagca 120

ccagggcatc cgatacctct ttggagatgg ttcacgactg gtgttccgcc tctctggaac 180

cggttctgtt ggtgccacca tccgtgtcta catcgagcag tacgagaggg actcctctaa 240

gaccggcag 249

<210> 1286
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1286

cgactggtgt tccccctctc tggaaccggt tctgttggtg ccaccatccg tgtctacatc 60

gagcagtacg agagggactc ctctaagacc ggcagggatt cacaggacgc ccttgctccg 120

ctggttgatg ttgcgctcaa gctctccaag atgcaagagt acactggacg ctctgccccc 180

accgtcatca cataaatttt gaagagtgtt ttagaatgag ttgaggcgct tacacaaact 240

ttcattccgg cctcttgtt 259

<210> 1287
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 1287

ctttgaggtg cctactggat ggaagttttt tgggaatttg atggatgctg gaatgtgctc 60

aatctgtggt gaagaaagct ttggcactgg gtctgaccac attcgtgaga aggatggcat 120

ctgggctgtg cttgcatggc tttcaattat tgctttcaag aataaggaca accttggagg 180

agataagctt gtcactgtcg aagatattgt ccgtcagcac tgggccacat atggtcgcca 240

ttactaca 248

<210> 1288
<211> 235
<212> nucleic acid
<213> Zea mays

<400> 1288

caaccttgga ggagataagc ttgtcactgt tgaagatatt gtccgtcagc actgggccac 60

atatggtcgc cattactaca cacgctatga ctatgagaat gttgatgcag ggctgctaa 120

ggagcttatg gcaaacctag taagcatgca gtcatcactt tctgatgtta acaagttggt 180

caaggagatc cggtctgatg tttctgaagt agttgcagct gacgagtttg agtac 235

<210> 1289
<211> 233
<212> nucleic acid
<213> Zea mays

<400> 1289

caattcctta ctttgcttct ggcctgaagg gagttgccag gagcatgcca acatctgctg 60

cccttgatgt tgttgcaaag aatttgaacc ttaagttctt tgaggtgcct actggatgga 120

agttttttgg gaatttgatg gatgctggaa tgtgctcaat ctgtggtgaa gaaagctttg 180

gcactgggtc tgaccacatt cgtgagaagg atggcatctg ggctgtgctt gca 233

<210> 1290
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1290

ggaggagata agcttgtcac tgtcgaagat attgtccgtc agcactgggc cacatatggt 60

cgccattact acacacgcta tgactatgag aatgttgatg caggggctgc taaggagctt 120

atggcaaacc tagtaagcat gcagtcatca ctttctgatg ttaacaagtt ggtcaaggag 180

atccggtctg atgtttctga agtagttgca gctgacgagt ttgagtacaa ggatcctgtt 240

gatggctctg tgt 253

<210> 1291
<211> 231
<212> nucleic acid
<213> Zea mays

<400> 1291

gcacgagaaa gctttggcac tgggtctgac cacattcgtg agaaagatgg catctgggct 60

gtgcttgcat ggctttctat tattgctttc aagaataagg acaaccttgg aggagataag 120

cttgtcactg ttgaagatat tgtccgtcag cattgggcca catatggtcg ccattattac 180

acacgctatg actatgagaa tgtcgatgct ggggctgcta aggagctgat g 231

<210> 1292
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 1292

gtcatcactt tctgatgtta acaagttgat caaggagatc cggtctgatg tttctgaagt 60

agttgcagct gacgagtttg agtacaagga tccagttgat ggctctgtgt ccaagcacca 120

gggcatccga tacctcttcg gagatggttc acgactggtg ttccgtctat ccggaaccgg 180

ttctgttggt gccgacatcc gtgtctacat cgagcaatac gag 223

<210> 1293
<211> 232
<212> nucleic acid
<213> Zea mays

<400> 1293

cccacgcgtc cggttgaaga tattgtccgt cagcactggg ccacatatgg tcgccattac 60

tacacacgct atgactatga gaatgttgat gcaggggctg ctaaggagct tatggcaaac 120

ctagtaagca tgcagtcatc actttctgat gttaacaagt tggtcaagga gatccggtct 180

gatgtttctg aagtagttgc agctgacgag tttgagtaca aggatcctgt tg 232

<210> 1294
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 1294

gagatccggt ctgatgtttc tgaagtagtt gcagctgacg agtttgagta caaggatcca 60

gttgatggct ctgtgtccaa gcaccagggc atccgatacc tcttcggaga tggttcacga 120

ctggtgttcc gtctatccgg aaccggttct gttggtgcca ccatccgtgt ctaattgggc 180

aatacgagaa gggttcctcc aagaccggca gggattcaca ggaggccctt gctccactgg 240

ttgat 245

<210> 1295
<211> 214
<212> nucleic acid
<213> Zea mays

<400> 1295

cttggaggac ataagcttgt cactgttcaa catattcgtc cgccagcact gggccacata 60

cggtcgccac tactacacac gctaccgcca cgagaacgct gatgcacggg ctgctaagga 120

ccttacgcgc aaacctagta accgtgcagt catcactttc tgatgctaac aagctggtca 180

aggagatccg gtctgatgtc ttctgaagta cctg 214

<210> 1296
<211> 226
<212> nucleic acid
<213> Zea mays

<400> 1296

cccacgcgtc cgcccacgcg tccggaaggg agttgccagg agcatgccaa catctgctgc 60

tcttgatgtt gttgcaaaga atttgaacct taagttcttt gaggtgccta ctggatggaa 120

gtttttttggg aatttgatgg atgctggaat gtgctcaatc tgtggtgaag agagctttgg 180

cactgggtct gaccacattc gtgagaagga tggcatctgg gctgtg 226

<210> 1297
<211> 199
<212> nucleic acid
<213> Zea mays

<400> 1297

ccttggagga gataagcttg tcactgtcga agatattgtc cgtcagcact gggccacata 60

tggtcgccat tactacacac gctatgacta tgagaatgtt gatgcagggg ctgctaagga 120

gcttatggca aacctagtaa gcatgcagtc atcactttct gatgttaaca agttggtcaa 180

ggagatccgg tctgatgtt 199

<210> 1298
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1298

gttctagatc gcgatctgcc gccctttttt tttttttttt ttttgctcaa acaaaaccag 60

aaacacttcc taacaagatt acaagaaaca cgctcccgat tacagcactg tcaatgtgac 120

aagattatta ccgcatgctg tgccagcggc tcagtccgct gcactgcagt acatggacaa 180

aaaaaaaacg gggcgagtct gatacataca ttttattcat tggtgagatg caacaggaag 240

tagaactata gaacaagagg cttgaatgaa aatttgtgta agcgcctcaa ctcattg 297

<210> 1299
<211> 310
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (25),(90)
<223> unsure at all n locations

<400> 1299

atcatttcta tacacacaac agtanacatg tcagcaacct cttgtattgt tatgttagat 60

ggataaattc tgttaacatg tggtatatan atggggccaa tcacttgtgt tctgaccaca 120

ttcgtgagaa ggatggcatc tgggctgtgc ttgcatggct ttcaattatt gctttcaaga 180

ataaggacaa ccttggagga gataagcttg tcactgttga agatattgtc cgtcagcact 240

gggccacata tggtcgccat tactacacac gctatgacta tgagaatgtt gatgcagggg 300

ctgctaagga 310

<210> 1300
<211> 211
<212> nucleic acid
<213> Zea mays

<400> 1300

agtacctaca gggtggaaat tttttgggaa tttgatggat gctggaatgt gctcaatctg 60

tggtgaagaa agctttggca ctgggtctga ccacattcgt gagaaagatg gcatctaggc 120

tgtgcttgca tggctttcta ttattgcttt caagaataag gacaaccttg gaggagataa 180

gcttgtcact gttgaagata ttgtccgtca g 211

<210> 1301
<211> 218
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (118)
<223>

<400> 1301

tgagcgccat tactacacac gctatgacta tgagatgttg atgcaggggc tgctaaggag 60

cttatggcaa acctagtaag catgcagtca tcactttctg atgttaacaa gttgtttnca 120

ggagatcggt ctgatgtttc tgatgtagtt gcagctgacg agtttgagta caaggatcct 180

gttgatggct ctgtgtccaa gcaccagggc atccgata 218

<210> 1302
<211> 173
<212> nucleic acid
<213> Zea mays

<400> 1302

actattattg ctttcaatca taaggacaaa cttggaagag ataagcttgt cactgttgaa 60

gatattgtcc gtcagcattg ggcgacatat ggtcgccatt attacacacg ctatgactat 120

gagaatgtcg atgctggggc tgctaaggcg ctgatggcaa acctaataag cat 173

<210> 1303
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1303

ccctctccct tttttttttt tgagtaaatt atttttagta ctcagaaaaa aagataagca 60

aatgctcaaa caaaaccaga aacacttcct aacaagatta caagacacac gctcccgatt 120

acagcactgt cactgtgaca agattattac cgcatgctgt gccagcggct cagtccgctg 180

cactgcagta catggacaaa aaaaaaacgg ggcgagtctg atacatacat tttattcatt 240

ggtgagatgc aacaggaagt agaa 264

<210> 1304
<211> 198
<212> nucleic acid
<213> Zea mays

<400> 1304

gcacgaggtt gcatctcacc aatgaataaa atgtatgtat cagactcgcc ccgttttttt 60

tttgtccatg tactgcagtg cagcggactg agccgctggc acagcatggc ggtaataatc 120

ttgtcacagt gacagtgctg taatcgggag cgtgtttctt gtaatcttgt taggaagtgt 180

ttctggtttt gtttgagc 198

<210> 1305
<211> 303
<212> nucleic acid
<213> Zea mays

<400> 1305

caaatgacca tctggaacac tgtttctgct aatgccagcc ttttcatctt ctgcttgtat 60

gcagctgtcc ggtcttagat gcatttgaaa tttctctatg cactgaacac tacttatgtt 120

attccattat tgtaataaca ggagcatgcc aacatctgct gctcttgatg ttgttgcaaa 180

gaatttgaac cttaagttct ttgaggtgcc tactggatgg aagttttttt gggaatttga 240

tggatgctgg aatgtgctca atctgtggtg aagaaagctt tggcactggg tctgaccaca 300

ttc 303

<210> 1306
<211> 122
<212> nucleic acid
<213> Zea mays

<400> 1306

ctttctgatg ttaacaagtt ggtcaaggag atccggtctg atgtttctga agtagttgca 60

gctgacgagt ttgagtacaa ggatcctgtt gatggctctg tgtccaagca ccagggcatc 120

cg 122

<210> 1307
<211> 118
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (12),(37)
<223> unsure at all n locations

<400> 1307

cggtctgatg tntctgaagt agtgcagctg acgagtntga gtacaaggat cctgttgatg 60

gctctgtgtc caagcaccag ggcatccgat acctctttgg agatggttca cgactggt 118

<210> 1308
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1308

caaatgacca tctggaacac tgtttctgct aatgccagcc ttttcatctt ctgcttgtat 60

gcagctgtcc ggtcttagat gcatttgaaa tttctctatg cactgaacac tacttatgtt 120

attccattat tgtaataaca ggagcatgcc aacatctgct gctcttgatg ttgttgcaaa 180

gaatttgaac cttaagttct ttgaggtgcc tactggatgg aagttttttt gggaatttga 240

tggatgctgg aatgtgctca atctgtggtg aagaaagctt tggcactggg t 291

<210> 1309
<211> 104
<212> nucleic acid
<213> Zea mays

<400> 1309

caactctaag accggcaggg attcacagga cgcccttgca ccgcaggttg atgtagcgct 60

caagctcacc aagatgcaag agtacacagg acgctcagcc ccca 104

<210> 1310
<211> 321
<212> nucleic acid
<213> Zea mays

<400> 1310

tgctcctccg ccgggacgcc gtcagccgcc caggcgctca agatcagttc aatcccgacc 60

aagccagttg aggggcagaa gactgggact agtggcctga ggaaaaaggt gaaagtattc 120

cagcaggaga actaccttgc taattggatt caggctctat tcaattcctt gccccctgaa 180

gattatgtgg gtgcaaccct tgtacttggg ggtgatggcc ggtactttaa caaggaggct 240

gctcagatca tcattaagat tgcagctgga aatggagttc agaagatcat agttggcagg 300

aatggtctac tgtcaacacc t 321

<210> 1311

<211> 306
<212> nucleic acid
<213> Zea mays

<400> 1311

ccacgcgtcc gccacgcgtc cgcccacgcg tccgccacgc gtccgggacc tgggatattc 60

cagcaggaga actaccttgc taattggatt caggctctat tcaattcctt gccccctgaa 120

gattatgtgg gtgcaacctt gtacttgggg gtgatggccg gtactttaac aaggaggctg 180

ctcagatcat cattaagatt gcagctggaa atggagttca gaagatcata gttggcagga 240

atggtctact gtcaacacct gctgtatctg ctgtaattcg taaaagaaaa gccaatggcg 300

gcttta 306

<210> 1312
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1312

cttgtacttg ggggtgatgg ccggtacttt aacaaggagg ctgctcagat catcattaag 60

attgcagctg gaaatggagt tcagaagatc atagttggca ggaatggtct actgtcaaca 120

cctgctgtat ctgctgtaat tcgtaaaaga aaagccaatg gcggctttat catgagtgca 180

agccataatc caggtggacc agacaatgac tggggtatta agtttaacta cagcagtgga 240

cagccagcac cggagacgat tactgatcaa atttatggaa acacactatc aatttctgaa 300

ataaaaacag c 311

<210> 1313
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1313

ttcagaagat catagttggc aggaatggtc tactgtcaac acctgctata tctgctgtaa 60

ttcgtaaaag ataagccaat ggcggcttta tcatgagtgc aagccataat ccaggtggac 120

cagacaatga ctggggtatt aagtttaact acagcagtgg acagccagca ccggagacga 180

ttactgatca aatttatgga aacacactat caatttctga aatacaaaca gcagacattc 240

ctgatactga tttgtcctct gttgg 265

<210> 1314
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1314

cgtcatcaca taaattttga agaacgtttt agaatgagtt gaggcgctta cacaaacttt 60

cattccggcc tcttgttcca tagtttttct tgcatgttac atctcaccga tgaataaaat 120

gtatgtatca gacttgtctc gtttttttgc ccatccaagc agcaaattag ccgctggcac 180

agcatgcggt aataatcttg tcacagtgct gtaattggga gcgtttttct tgttagaagt 240

gtttctggtt tgtttgagca tttgcgtatc gatttttctt tctgaagagt ataaattatt 300

tt 302

<210> 1315
<211> 300
<212> nucleic acid
<213> Zea mays

<400> 1315

tctcactccc gtgtcgtgtc tagcgccgac gggttgctac cggagccggc cagcggccac 60

gatgcctaca atgcacgcgc ttcgcctatg cccgctgctc tccaccatcc gatccacacc 120

accgcgggcc actgccgcag cccgccaggc gcgctcttcg tcgcccgctg ctcctccgcc 180

gggacgccgt cagccgccca ggcgctcaag atcagttcaa tcccgaccaa gccagttgag 240

gggcagaaga ctgggactag tggcctgagg aaaaaggtga aagtattcca gcaggagaac 300

<210> 1316
<211> 356
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (82),(323)
<223> unsure at all n locations

<400> 1316

cgatccctgc accactaccg cctcctccgc ttcacccctc tcgtcgcctc ttgcggcgac 60

cggcggcgga tcgtccgcgg cngcaacgca accatggggc tcttcaccgt gacgaagaag 120

gccaccaccc ccttcgaagg ccagaagccc ggtacctccg gcctccgcaa gaaggttact 180

gtattccagc agcctcatta tctgcagaac tttgtccagt caacattcaa tgcccttcct 240

gcagaccaag taaaaggtgc aaccattgtt gtctctggtg atggccgcta tttctcaaaa 300

gatgctgttc agatcataac aanaatggct gctgccaatg gagtaagacg tgtttg 356

<210> 1317
<211> 304
<212> nucleic acid
<213> Zea mays

<400> 1317

ctgtcatccg tgaaagaatt ggtgcagatg gatcaaaggc tactggtgcc ttcatcttga 60

cagcgagcca taacccaggt ggtcctacgg aggactttgg tatcaaatac aatatgggaa 120

atggtggacc tgcccctgaa tccgttaccg acaagatttt ctctaataca acgacaatct 180

ctgaatacct catctctgaa gaccttccag atgttgatat ttctgttgtc ggtgtcacca 240

gcttcagtgg acccgaagcc cctttgatgt ggatgtcttt gactctagtg taaattacat 300

aaag 304

<210> 1318
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1318

cccacgcgtc cgggtgatgg ccgctatttc tcaaaagatg ctgttcagat cataacaaaa 60

atggctgctg ccaatggagt aagacgtgtt tgggttggac aaaacagtct catgtctact 120

cctgctgtat ctgctgtcat ccgtgaaaga gttggtgcag atggatcaaa ggctactggt 180

gccttcatct tgacagcgag ccataaccca ggtggtccta aggaggactt cgggatcaaa 240

tacaacatgg gaaatggtgg gcctgctcct gaatctgtta ccgacaagat ttctctaat 300

acaacga 307

<210> 1319
<211> 292

<212>	nucleic acid
<213>	Zea mays

<400>	1319

aagcccggta cctccggcct ccgcaagaag gttactgtat tccagcagcc tcattatctg 60

cagaactttg tccagtcaac attcaatgcc cttcctgcag accaagtaaa aggtgcaacc 120

attgttgtct ctggtgatgg ccgctatttc tcaaaagatg ctgttcagat cataacaaaa 180

atggctgctg ccaatggagt aagacgtgtt tgggttggac aaaacagtct catgtctact 240

cctgctgtat ctgctgtcat ccgtgaaaga attggtgcag atggatcaaa gg 292

<210>	1320
<211>	294
<212>	nucleic acid
<213>	Zea mays

<400>	1320

gcagaacttt gtccaatcaa cattcaatgc ccttcctgtg gatcaagtaa gacgtgcaac 60

aattgttgtc tctggtgatg gccgctattt ctcaaaagat gctgttcaga tcataacaaa 120

aatggctgct gccaatggag taagacgtgt ttgggttgga caaaacagtc tcatgtctac 180

tcctgctgta actgctgtca tccgtgaaag agttggtgca gatggatcaa aggctactgg 240

tgccttcatc ttgacagcga gccataaccc aggtggtcct aaagaggact tcgg 294

<210>	1321
<211>	312
<212>	nucleic acid
<213>	Zea mays

<400>	1321

cctctcactc ccgatccctg caccactacc gcctcctccg cgtcacccct ctcgtcgcct 60

cttgcggcga ccggcggcgg atcgtccgca gcgcaagcgc aaccatgggg ctcttcaccg 120

tgacgaagaa ggccaccacc cccttcgaag gccagaagcc cggtacctcc ggcctccgca 180

agaaggttac tgtattccag cagcctcatt atctgcagaa ctttgtccag tcaacattca 240

atgcccttcc tgcagaccaa gtaaaaggtg caaccattgt tgtctctggt gatggccgct 300

atttctcaaa ag 312

<210> 1322
<211> 284
<212> nucleic acid
<213> Zea mays

<400> 1322

gtgcagatgg atcaaaggct actggtgcct tcatcttgac agcgagccat aacccaggtg 60

gtcctaagga ggacttcggg atcaaataca acatgggaaa tggtgggcct gctcctgaat 120

ctgttaccga caagattttc tctaatacaa cgacaatctc tgaatacctc atctctgaag 180

acctaccaga tgttgatatt tctgttgtcg gtgtcaccag cttcagtgga cccgaaggcc 240

cctttgatgt ggatgttttt gactctagtg tagattacat aaag 284

<210> 1323
<211> 310
<212> nucleic acid
<213> Zea mays

<400> 1323

tatgcagatg gatcaaaggc tactggtgcc ttcatcttga cagcgagcca taacccaggt 60

ggtcctacgg aggactttgg tatcaaatac aatatgggaa atggtggacc tgcccctgaa 120

tccgttaccg acaagatttt ctctaataca acgacaatct ctgaatacct catctctgaa 180

gaccttccag atgttgatat ttctgttgtc ggtgtcacca gcttcagtgg acccgaaggc 240

ccctttgatg tggatgtctt tgactctagt gtaaattaca taaagttaat gaagacaatt 300

tttgacttcg 310

<210> 1324
<211> 296
<212> nucleic acid
<213> Zea mays

<400> 1324

ccgatccctg caccactacc gcctcctccg cttcacccct ctcgtcgcct cttgcggcga 60

ccggcggcgg atcgtccgca gcgcaacgca accatggggc tcttcaccgt gacgaagaag 120

gccaccaccc ccttcgaagg ccagaagccc ggtacctccg gcctccgcaa gaaggttact 180

gtattccagc agcctcatta tctgcagaac tttgtccagt caacattcaa tgcccttcct 240

gcagaccaag taaaaggtgc aactattgtt gtctctggtg atggccgcta tttctc 296

<210> 1325
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1325

gaaatggtgg gcctgctcct gaatctgtta ccgacaagat tttctctaat acaacgacaa 60

tctctgaata cctcatctct gaagacctac cagatgttga tatttctgtt gtcggtgtca 120

ccagcttcag tggacctgaa ggcccctttg atgtggatgt ttttgactct agtgtagatt 180

acataaagtt aatgaagtca atttttgact tcgaagcaat aaaaaagctg ctgacctccc 240

caaagtttac attctgttat gatgc 265

<210> 1326
<211> 281
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (273)
<223>

<400> 1326

cctcactgcc ctctcactcc cgatccctgc accactaccg cctcctccgc gtcacccctc 60

tcgtcgcctc ttgcggcgac cggcggcgga tcgtccgcag cgcaagcgca accatggggc 120

tcttcaccgt gacgaagaag gccaccaccc ccttcgaagg ccagaagccc ggtacctccg 180

gcctccgcaa gaaggttact gtattccagc agcctcatta tctgcagaac tttgtccagt 240

caacattcaa tgcccttcct gcagaccaag tanaaggtgc a 281

<210> 1327
<211> 250
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (176)
<223>

<400> 1327

gtcctaagga ggacttcggg atcaaataca acatgggaaa tggtgggcct gctcctgaat 60

ctgttaccga caagattttc tctaatacaa cgacaatctc tgaatacctc atctctgaag 120

acctaccaga tgttgatatt tctgttgtcg gtgtcaccag cttcagtgga cccganatcc 180

cctttgatgt ggatgttttt gactctagtg tagattacat aaagttaatg aagacaattt 240

ttgacttcga 250

<210> 1328
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1328

gaaatggtgg gcctgctcct gaatctgtta ccgacaagat tttctctaat acaacgacaa 60

tctctgaata cctcatctct gaagacctac cagatattga tatttctgtt gtcggtgtca 120

ccagcttcag tggacctgaa ggcccctttg atgtggatgt tttgactct agtgtagatt 180

acataaagtt aatgaagtca atttttgact tcgaagcaat aaaaaagctg ctgacctccc 240

caaagtttac attct 255

<210> 1329
<211> 267
<212> nucleic acid
<213> Zea mays

<400> 1329

cccacgcgtc cgccactcct tccctgccct ctcactcccg atccctcctc caccaccgct 60

tcctccgcgt cacccctctc gtcgtcgcct cacgaggcga ccagcggcgg accctccgcg 120

gcgcaaccat ggggctcttc actgtgacga agaaggccac cacgcccttc gacggccaga 180

agcccggcac ctccggcctc cgcaagaagg ttactgtatt ccagcagccc cattatctgc 240

agaactttgt ccaatcaaca ttcaatg 267

<210> 1330
<211> 308
<212> nucleic acid
<213> Zea mays

<400> 1330

cggaccgtgg cggaaatagt gaggagcgga gaacaccgga atgatccatc ctcttgtgct 60

ttccctgccc ttccccgcta taatatcgcg ccctcgtcag catcgtcacc acaccagcac 120

tccctcactg ccctctcact cccgatccct gcaccactac cgcctcctcc gcttcagccc 180

tctcgtcgcc tcttgcggcg accggcggcg gatcgtccgc ggcgcaacgc aaccatgggg 240

ctcttcaccg tgacgaagaa ggccaccacc cccttcgaag gccagaagcc cggtagctcc 300

ggcctccg 308

<210> 1331
<211> 244
<212> nucleic acid
<213> Zea mays

<400> 1331

gaaatggtgg gcctgctcct gaatctgtta ccgacaagat tttctctaat acaacgacaa 60

tctctgaata cctcatctct gaagacctac cagatgttga tatttctgtt gtcggtgtca 120

ccagcttcag tggacccgaa gccccttga tgtggatgtt tttgactcta gtgtagatta 180

cataaagtta atgaagacaa tttttgactt cgaagcaata aaaaagctgc tgacctcccc 240

aaag 244

<210> 1332
<211> 266
<212> nucleic acid
<213> Zea mays

<400> 1332

ccatcctctc gtgctatccc tgccctcccc cgctataata tcgcgccctc gtcgccatcg 60

tcaccacacc accactccct cactgccctc tcactcccga tccctgcacc actaccgcct 120

cctccgcgtc acccctctcg tcgcctcttg cggcgaccgg cggcggatcg tccgcggcgc 180

aacgcaacca tggggctctt caccgtgacg aagaaggcca ccacccctt cgaaggccag 240

aagcccggta cctccggcct ccgcaa 266

<210> 1333
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 1333

ggagtaagac gtgtttgggt tggacaaaac agtctcatgt ctactcctgc tgtatctgct 60

gtcatccgtg aaagagttgg tgcagatgga tcaaaggcta ctggtgcctt catcttgaca 120

gcgagccata acccaggtgg tcctaaggag gacttcggga tcaaatacaa catgggaaat 180

ggtgggcctg ctcctgaatc tgttaccgac aagattttct c 221

<210> 1334
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 1334

ctgccctctc actcccgatc cctgcaccac taccgcctcc tccgcttcac ccctctcgtc 60

gcctcttgcg gcgaccggcg gcggatcgtc cgcggcgcaa gcacaaccat ggggctcttc 120

accgtgacga agaaggccac cacccccttc gaaggccaga agcccggtac ctccggcctc 180

cgcaagaagg ttactgtatt ccagcagcct cattatctgc agaactttgt 230

<210> 1335
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1335

ctgcaccact accgcctcct ccgcgtcacc cctctcgtcg catcttgcgg cgaccggcgg 60

cggatcgtcc gatgcgcacg cgtaacactg gggctcttca ccgtgacgaa gaaggccacc 120

accccccttcg aaggccagaa gcccggtacc tccggcctac gcaagaaggt tactgtattc 180

cagcagcctc attatctgca gaacttggtc cagtcaacat tcaactgcct tcctgcagac 240

caagtaaaag gtgcaccatt gttgtctctg g 271

<210> 1336
<211> 238
<212> nucleic acid
<213> Zea mays

<400> 1336

cctccgcgtc acccctctcg tcgcctcttg cggcgaccgg cggcggatcg tccgcggcgc 60

aacgcgacca tggggctctt caccgttccg aagaaggtca ccatcccctt cgaaggccag 120

aagcccggta cctccggcct ccgcaagaag gttactgtat tccagcagcc tcattagctg 180

cagagctttg tcgagtcaac attcaatgtc cttcctgcag accaagtaaa atgtgcac 238

<210> 1337
<211> 163
<212> nucleic acid
<213> Zea mays

<400> 1337

ctctcactcc cgatccctgc accactaccg cctcctccga gtcacccctc tcgtcgcctc 60

ttgcggcgac cggcggcgga tcgtccgcag cgcaacgcaa ccatggggct cttcaccgtg 120

acgaagaagg ccaccacccc cttcgaaggc cagaagcccg gta 163

<210> 1338
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 1338

gaatggtggg ctgctcctga atctgttacc gacaagattt tctctaatac aacgacaatc 60

tctgaatacc tcatctctga agacctacca gatgttgata tttctgttgt cggtgtcacc 120

agcttcagtg agaccgaagg ccctttgatg tggatgtttt gactcaagtg tagattacat 180

aagtaatgaa gcaattttga ctcgaagcat aaaaaactgt gact 224

<210> 1339
<211> 192
<212> nucleic acid
<213> Zea mays

<400> 1339

ctgccctctc actcccgatc cctgcaccac taccgcctcc tccgcttcac ccctctcgtc 60

gcctcttgct gcgaccggcg gcggatcgtc cgcagcgcaa gcgcaaccat ggggctcttc 120

accgtgacga agaaggccac cacccccttc gaaggccaga agcccggtac ctccggcctc 180

cgcaagaagg tt 192

<210> 1340
<211> 141
<212> nucleic acid
<213> Zea mays

<400> 1340

gcctccctgc cctctcactc ccgatccctc ctccaccgcc gcttcctccg cgtcacccct 60

ctcgtagtcg cctcacgagg cgaccagcgg cggaccctcc gcggcgcaac catggggctc 120

ttcactgtga cgaagaaggc c 141

<210> 1341
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1341

gcgagatcaa tgccaaccag tggtgctctt gatcgtgttg ccgagaaatt gaatgttcca 60

ttctttgagg ttccaacagg ctggaaattt tttggcaacc taatggatgc aggaaaattg 120

tctatttgtg gagaggaaag ttttgggact ggatctgatc acatcagaga gaaggatggc 180

atctgggctg ttctggcttg gctttccata cttgcacacc ggaacaagga taagaaggtc 240

ggagagagat tagtg 255

<210> 1342
<211> 273
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (2),(230),(260),(269)
<223> unsure at all n locations

<400> 1342

gnatcgtgtt gccgagaaat tgaatgttcc attctttgag gttccaacag gctggaaatt 60

tacctgcatc cattaggttg ccaaaaaatt gtctatttgt ggagaggaaa gttttgggac 120

tggatctgat cacatcagag agaaggatgg catctgggct gttctggctt ggctttccat 180

acttgcacac cggaacaagg ataagaaggt cggagagaga ttagtgtcan ttgaggatat 240

tgctatggag cactggaaan cctatggcng gat 273

<210> 1343
<211> 268
<212> nucleic acid
<213> Zea mays

<400> 1343

ctcatctctg aagaccttcc agatgttgat atttctgttg tcggtgtcac cagcttcagt 60

ggacccgaag gcccctttga tgtggatgtc tttgactcta gtgtaaatta cataaagtta 120

atgaagacaa tttttgactt cgaagcaata aaaaagctac tgacctcccc aaagtttaca 180

ttctgttatg atgcgctcca tggtgttgct ggagcttatg ccaaacacat ctttgtggaa 240

gagcttggtg ctgatgaaag ctcactgt 268

<210> 1344
<211> 236
<212> nucleic acid
<213> Zea mays

<400> 1344

catctctgaa gacctaccag atgttgatat ttctgttgtc ggtgtcacca gcttcagtgg 60

acccgaagcc cctttgatgt ggatgttttt gactctagtg tagattacat aaagttaatg 120

aagacaattt ttgacttcga agcaataaaa aagctgctga cctccccaaa gtttacattc 180

tgttatgatg cactccatgg tgttgcggga cttatgccat acacatcttt gtggaa 236

<210> 1345
<211> 433
<212> nucleic acid
<213> Zea mays

<400> 1345

cccacgcgtc cgctgatacc gtactaccgt ctacaggatc agtatagctg aaggcatgag 60

caaattggag ggtgtagacg gtagtacggt atcaaaacaa ggacttcgat ttgttttcac 120

tgatggatct aggattatct tccggctttc gggaaccgga tctgctggag ctactatccg 180

cctctacata gaacaatttg aatctgatat ctcgaagcat agtctcgatg ctcaaacagc 240

tttgaagcct ttaatagacc tggctttgtc tgtttcgaag ctcaaggact tcacaggaag 300

agagaaacct actgtcataa cataggccct gtttgtttcg gcttttggca gcttctggcc 360

accaaaagct actgcgtact gtcaaacgct cagcttttca gccagcttct ataaaattcg 420

gttggggcaa aaa 433

<210> 1346
<211> 408
<212> nucleic acid
<213> Zea mays

<400> 1346

gtacgtgcgt gactacagtt gcatgctatg gccatggcca cgacttcgcc ggcaactggg 60

cagccatcat catacaagca cacgagccgc ggcgcggcgc ggtgctgccc tcctcctctg 120

ctgtcctgga agacacgaag ctttgggcag caggtgacga caagggccac ggcggcgagc 180

tcccgtgggc agcccgccgg cgtggcactg gcagggggag aagagggcga cagtatcagg 240

cggctgcaga acgggtcgga cgtgcggggc gtcgcgctgg agggcgagaa aggccgggcc 300

gtggacctca cgccgctggc ggtcgaggcc atcgccgaga gcttcgggga gtggctgcga 360

gaggaggagc tccggctccg gggccaggag cccgagcagc tgcgtgtg 408

<210> 1347
<211> 431
<212> nucleic acid
<213> Zea mays

<400> 1347

cccacgcgtc cggcttggtg ctgatgaaag ctcactgttg aattgtgtcc cgaaagagga 60

ctttggaggt ggtcatccgg atcctaacct tacctatgca aaagagttgg ttgaacgcat 120

gggtcttgga aagtcatcct caaatgttga gcctcctgaa tttggtgctg cagctgatgg 180

agatgctgac cgcaacatga ttcttggtaa aagattcttt gtgacaccgt cggactctgt 240

tgccattatc gcagccaatg ctgttcaatc aattccttac tttgcttctg gcctgaaagg 300

agttgccagg agcatgccaa catctgctgc ccttgatgtt gttgcaaaga atttgaacct 360

taagttcttt gaggtgccta ctggaatgaa gtttttgggg aatttgatgg atgctggaat 420

gtgctcaatc t 431

<210> 1348
<211> 418
<212> nucleic acid

<213> Zea mays

<400> 1348

gtccgtcagc actgggccac atatggtcgc cattactaca cacgctatga ctatgagaat 60

gttgatgcag gggctgctaa ggagcttatg gcaaacctag taagcatgca gtcatcactt 120

tctgatgtta acaagttggt caaggagatc cggtctgatg tttctgaagt agttgcagct 180

gacgagtttg agtacaagga tcctgttgat ggctctgtgt ccaagcacca gggcatccga 240

tacctctttg gagatggttc acgactggtg ttccgcctct ctggaaccgg ttctgttggt 300

gccaccatcc gtgtctacat cgagcagtac gagagggact cctctaagac cggcagggat 360

tcacaggacg cccttgcttc gctggttgat gttgcgctca agctcttcaa gatgcaag 418

<210> 1349
<211> 359
<212> nucleic acid
<213> Zea mays

<400> 1349

ggcctgaagg gagttgccag gagcatgcct tcatctgctg cccttgatgt tgttgcaaag 60

aatttgaacc ttaagttctt tgaggtgcct actggatgga agtttttggg gaatttgatg 120

gatgctggaa tgtgctcaat ctgtggtgaa gaaagctttg gcactgggtc tgaccacatt 180

cgtgagaagg atggcatctg ggctgtgctt gcatggcttt caattattgc tttcaagaat 240

aaggacaacc ttggaggaga taagcttgtc acttgtgaag atattgtccg tcagcactgg 300

gccacatatg gtcgccatta ctacacacgc tatgactatt aaaatgttga tgcacgggc 359

<210> 1350
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1350

ctgaatttgg tgctgcagct gatggagatg ctgaccgcaa catgattctt ggtaaaagat 60

tctttgtgac accgtcggac tctgttgcca ttatcgcagc caatgctgtt caatcaattc 120

cttactttgc ttctggcctg aagggagttg ccaggagcat gccaacatct gctgcccttg 180

atgttgttgc aaagaatttg aaccttaagt tctttgaggt gcctactgga tggaagtttt 240

ttgggaattt gatggatgct ggaatgtgct caatctgtgg tgaagaaagc tttggcactg 300

ggtctgacca cattcgtgag aaggatggca tctgggctgt gcttgcatgg ctttcaatta 360

ttgctttcaa gaataaggac aaacttggag gagataagct tgtcactgtt gaagatattg 420

t 421

<210> 1351
<211> 377
<212> nucleic acid
<213> Zea mays

<400> 1351

gggagttgcc aggagcatgc caacatctgc tgcccttgat gttgttgcaa agaatttgag 60

ccttgagttc tttgaggtgc ctactggatg gaagcttttt gggaattgga tggatgctgg 120

aatgtgctca atctgtggtg aagaaagctt tggcactgtg gctgaccaca ttcgtgagaa 180

ggatggcatt tgggctgagc ttgcatggct atcaattatt gctttcaaga gtttggacag 240

ccttgtagga gataagcttg tcactgatga agatatgtgt cgctagcact ggtccacata 300

tggtcgctat ttctacactc gctatgacta tgagaatttt tatgcacggg ctgctaatga 360

gcttattgct tacctag 377

<210> 1352
<211> 343
<212> nucleic acid
<213> Zea mays

<400> 1352

gactggtgtt ccgcctctct gggaccggtt ctgttggtgc caccatccgt gtctacatcg 60

agcagtacga gagggactcc tctaagaccg gcagggattc acaggacgcc cttgctccgc 120

tggttgatgt tgcgctcaag ctctccaaga tgcaagagta cactggacgc tctgccccca 180

ccgtcatcac ataaattttg aagtgtttta gaatgagttg aggcgcttac acaaactttc 240

attccggcct cttgttccat agtttttctt gcatgttaca tctcaccgat gaataaaatg 300

tatgtatcag acttgtctcg ttaaaaaaaa aaagaaataa aaa 343

<210> 1353
<211> 293
<212> nucleic acid

<213> Zea mays

<400> 1353

gccaaacaca tctttgtgga agagcttggt gctgatgaaa gctcactgtt gaattgtgtc 60

ccgaaagagg actttggagg tggtcatccg gatcctaacc ttacctatgc aaaagagttg 120

gttgaacgca tgggtcttgg aaagtcatcc tcaaatgttg agcctcctga atttggtgct 180

gcagctgatg gagatgctga ccgcaacatg attcttggta aaagattctt tgtgacaccg 240

tcggactctg ttgccattat cgtaaccaat ggctgtcaat caattcctta ctt 293

<210> 1354
<211> 464
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (41),(44)
<223> unsure at all n locations

<400> 1354

aggatggagg caatggggag gaggagagaa atgtaaactc naanccgggg gggagcacgc 60

gttccgggca aaacatattt ttgggaaaaa cctttttctg atttaaggtt acaggtagaa 120

tggggtcccg aaggaggcct ttgaaggtgg caatccgatt cctaacctaa ctattccaaa 180

aaagttggtg gaccccttgg tcttggaaaa gcaatcctaa atggtgagcc ctctggattt 240

tgtgctgcag cttatggaga tgctgaccgc aacatgattc ttggtaaaag attctttgtg 300

acaccgtcgg actctgttgc cattatcgca gccaatgctg ttcaatcaat tccttacttt 360

gcttctggcc tgaagggagt tgccaggagc atgccaacat ctgctgccct tgatgttgtt 420

gcaaagaatt tgaaccttaa gttctttgag gtgcctactg gatg 464

<210> 1355
<211> 136
<212> nucleic acid
<213> Zea mays

<400> 1355

gatccggtct gatgtttctg aagtagttgt tgctgacgag tttgagtaca aggatgctgt 60

ggatggctct gtgtccaagc accagggcat ccgatacctc tttggagatg gttcacgact 120

ggtgttccgc ctctct 136

<210> 1356
<211> 280
<212> nucleic acid
<213> Zea mays

<400> 1356

atgagttgag gcgcttacac aaactttcat tccggcctct tgttccatag tttttcttgc 60

atgttacatc tcaccgatga ataaaatgta tgtatcagac ttgtctcgtt tttttgccca 120

tccaagcagc aaattagccg ctggcacagc atgcggtaat aatcttgtca cagtgctgta 180

attgggagcg tttttcttgt tagaagtgtt tctggtttgt ttgagcattt acggatcgat 240

ttttctttct gaagagtata taaacatttt actcacctgt 280

<210> 1357
<211> 221
<212> nucleic acid
<213> Zea mays

<400> 1357

gagttgaggc gcttacacaa actttcattc cggcctcttg ttccatagtt tttcttgcat 60

gttacgtctc accgatgaat aaaatgtatg tatcagactt gtctcgtttt tttgcccatc 120

caagcagcaa attagccgct ggcacagcat gcggtaataa tcttgtcaca gtgctgtagt 180

tgggagcgtt tttcttgtta gaagtgtttc tggtttgttt g 221

<210> 1358
<211> 350
<212> nucleic acid
<213> Zea mays

<400> 1358

actcacaccc gatccctctt ccaccaccgg cttcctccgc gtcacccctc ctcgtccgtc 60

gcctcacaag gcgaccagcg ggcggaccct ccgcggcgca accatggggc tcttcactgt 120

gacgaagaag gccaccacgc ccttcgacgg ccagaagccc ggcacctccg gcctccgcaa 180

gaaggttact gtattccagc agccccatta tctgcagaac tttgtccaat caacattcaa 240

tgcccttcct gtggatcaag taagaggtgc aacaattgtt gtctctggtg atggccgcta 300

tttctcaaaa gatgctgttc agatcatcac aaaaatggct gctgccaatg 350

<210> 1359
<211> 409
<212> nucleic acid
<213> Zea mays

<400> 1359

agccatcgcg tccgactcct tccctgccct ctcactccaa atccctcctc caccaccgct 60

tcctccgcgt cacccctctc gtcgtcgcct cacgaggcga ccagcggcgg accctcgggg 120

gcgcaaccat ggggctcttc actgtgacgg ggaaggccac cacgcccttc gacggccaga 180

agcccggcac ctccggcctc cgcaagaagg ttactgtatt ccagcatccc cattatctgc 240

agaactttgt ccaatcaaca ttcaatgccc ttcctgtgga tcaagtaaga ggtgcaacaa 300

ttgttgtctc tggtgatttt ttctatttct caaaagatgc tgttcagatc ataacaaaaa 360

tggctgctgc caatggagta acacgtgttt gggttggaca aaacaatct 409

<210> 1360
<211> 396
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (344),(351)
<223> unsure at all n locations

<400> 1360

cccacgcgtc cgcccacgcg tccgggaaat cactccagaa ttttgaaaag gtgacggaaa 60

tagtgaggag cggagaacac cggaatgatc catcctctcg tgctatccct gccctccccc 120

gctataatat cgcgccctcg tcgccatcgt caccacacca ccactccctc actgccctct 180

cactcccgat ccctgcacca ctaccgcctc ctccgcgtca cccctctcgt cgcctcttgc 240

ggcgaccggc ggcggatcgt ccgctgcgca agcgcaacca tggggctctt caccgtgacg 300

aagaaggcca tcacccctt cgaaagccag aagcccggta cctnctgcct ncgcaagaag 360

gttactgtat tccagcagcc tcattatctg cagaac 396

<210> 1361

<211> 138
<212> nucleic acid
<213> Zea mays

<400> 1361

caacactaac aacttgtggg tgaaccttaa agctgtcaag agactagtag agctgagcac 60

ttaagatgga attatcaacc cagaagtgat gggaatctca cttgactgat ggacattcgt 120

cttcaacgtg atagtccg 138

<210> 1362
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1362

cgttcaagaa ggttgggagc ttccttggtc gcttcaagtc catacctagc attgttgagc 60

ttgacatctt gaaggtttcc ggtgatgttt ggttcggttc tggaattgta ctgaagggga 120

aagtgaccat cactgcaaaa cctggcgtca agctagaaat cccagacgga gcagtgattg 180

ggaataagga taattttgga aaaggaaaga gaaaacaata ccagatgcct tacaacctga 240

attagggatg aaactgctaa ttgc 264

<210> 1363
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1363

gtcttaggtt attatagaag ttaaaatgtt attccaatga ggcaatgact actcacaatg 60

gaatatcacc ttgcttgttg gattatttac ggtgaagact tttagatata gtttgaactg 120

tacctcattt atagcgtatt tacataaatg tgatacccat ctgattgttg tgatttttga 180

tgtgtaaggt atcctcctgg tcatggtgat gtgtttcctt ctttgaataa cagcggaaaa 240

cttgacatct tattggctca gggcaaggag tatgtctttg ttgcaaactc agaca 295

<210> 1364
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1364

agtcaaacct ctatagtctt aatgcaggat ctcggacaat gagtgacaag cgggaatttc 60

ctacagtgcc cttggttaaa ttaggcagtt cttttacgaa ggttcaagat tatctacgaa 120

gatttgaaag tataccagat atgcttgaat tggatcacct cacagtctca ggagatgtga 180

catttggaaa aaatgtttca ttacagggaa cggttatcat cattgcatat catggtgaca 240

cttttgatat ccctcctgga gcagtattag agcac 275

<210> 1365
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1365

gtggagtgaa accctaggtt taccgtggaa gaagaaagtc cattcggcgc gctctaggtg 60

tttggcaaaa agcttaaacc ggaaatcgtc atcgccctta cacatatcga tttggtttat 120

gacatgtctg atctatatac cttggttgat ggcttcgtta cacgtaattc agctaggact 180

ttagggcaaa gtgatcatca ctgcaaaacc tggcgtcaag ctagaaatcc cagacggagc 240

agtgattggg aataagattc caagttcaca cagcaggagt tgc 283

<210> 1366
<211> 234
<212> nucleic acid
<213> Zea mays

<400> 1366

gacaaatcca tcaaatccct caattgaact tagtcctgag ttcaagaagg ttgcggagct 60

tccttggtcg cttcaagtcg atacctagca ttcactgaca gcttgaaggt ttccggtgat 120

gtttggttcg gttctggact tgtattgaag gggacagtga ccatcactgc aaaacctggc 180

gtcaagctag aaatcccaga cggagcagtg attgggaata cggatatcag tggc 234

<210> 1367
<211> 212
<212> nucleic acid
<213> Zea mays

<400> 1367

ctccaacatt gcaattcata ctttcaatca gagccagtat cctcgcattg ttaccgagga 60

cttcttgcca cttccaagca aagggacatc ttggaaggat ggctggtatc ctccaggcca 120

tggtgatgtg ttcccctctt tgaataacag tggaaaactc gacatcttat tggctcaggg 180

caaggagtat gtcttcgttg ctaactagac aa 212

<210> 1368
<211> 274
<212> nucleic acid
<213> Zea mays

<400> 1368

cccggcgtca gacgcgcatc ttccagcaat ggcggacgag aagctgccaa ctgcgcgaag 60

caccgccggc ctcacgcaga tcagcgataa cgagaagtcc ggcttcctca gcctcgtcgg 120

ccgctacctc agcggcgacg aggagcacat cgagtgggcc aagatccaca cgcccaccga 180

cgaggtggtg gtgccgtacg acaccctgga gtccccgcca gaaggcactg aggcgaccaa 240

gaagctgctc gacaagctcg ccgtgctcaa gctc 274

<210> 1369
<211> 248
<212> nucleic acid
<213> Zea mays

<400> 1369

ctctcccaga tccgtctccc ggcgtcagac gcgcatcttc cagcaatggc ggacgagaag 60

cttgccaagc tgcgcgaacc accgccggcc tcacgcagat cagcgagaac gagaagtccg 120

gcttcctcag cctcgtcggc cgatacctca gtggcgacga ggagcacatc gagtgggcca 180

agatccacac gcccaccgac gaggtggtgg tgccgtacga caccctggag tccccgccag 240

aaggcact 248

<210> 1370
<211> 186
<212> nucleic acid
<213> Zea mays

<400> 1370

ctcccggcgt cagacgcgca tctccagcaa tggcggacga gaaacttgcc aagctgcgcg 60

aaccaccgcc ggcctcacgc agatcagcga gaacgagaag tccggcttcc tcagcctcgt 120

cggccgctac ctcagcggcg acgaggagca catcgagtgg gccaagatcc acacgcccac 180

cgacga 186

<210> 1371
<211> 323
<212> nucleic acid
<213> Zea mays

<400> 1371

cagttaaagc gacatcagat ttgcagctag tacagtctga tctatatacc ttggttgatg 60

gcttcgttac acgtaattca gccagaacaa atccatcaaa tccctcaatt gaacttagtc 120

ctgagttcaa gaaggttggg agcttccttg gtcgcttcaa gtcgatacct agcattgttg 180

agcttgacag cttgaaggtt tccggtgatg tttggttcgg ttctggaatt gtattgaagg 240

ggaaagtgac catcactgca aaacctggcg tcaagctaga aatcccagac ggagcagtga 300

ttgggaataa ggatatcagt ggc 323

<210> 1372
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 1372

cggacgcgtg gctgacgcgt gggcggacgc gtgggatgcc attggtatca acgttccaag 60

gtcccgctat cctaccagtt aaggcgacat cagcatttgc agctagtaca gtctgatcta 120

tataccttgg ttgatggctt cgttacacgt aattcagcca gaacaaatcc atcaaatcca 180

tcaattgaac ttggtcctga gttcaagaag gttgggagct tccttggtcg cttcaagtcg 240

atacctagca ttgttgagct tgacagcttg aaggtttccg gtgatgtttg gttcggttct 300

ggaatgtact gaacgggaaa gtgaccat 328

<210> 1373
<211> 301
<212> nucleic acid
<213> Zea mays

<400> 1373

ggaccagttc tttgaccatg ccattggtat caacgttcca aggtcccgct tcctaccagt 60

taaggcgaca tcagatttgc agctagtaca gtctgatcta tataccttgg ttgatggctt 120

cgttacacgt aattcagcca gaacaaatcc atcaaatccc tcaattgaac ttggtcctga 180

gttcaagaag gttgggagct tccttggtcg cttcaagtcc atacctagca ttgttgagct 240

tgacatcttg aaggtttccg gtgatgtttg gttcggttct ggaattgtac tgaaggggaa 300

a 301

<210> 1374
<211> 349
<212> nucleic acid
<213> Zea mays

<400> 1374

agagccagta tcctcgcatt gttaccgagg acttcttgcc acttccaagc aaagggaaat 60

ctggtaagga tggctggtat cctccaggcc atggtgatgt gttcccctct ttgaataaca 120

gtggaaaact cgacatctta ttggctcaag gcaaggagta tgtcttcatt gctaactcag 180

acaacttggg tgctatagtc gacatcaaga tcctgaacca tctgatcaat aaccagaatg 240

aatactgcat ggaggttact ccaaaaacat tggctgatgt taaaggcggt actctcatct 300

cttacgaagg aagagttcag cttttggaga ttgcccaagt acctgatga 349

<210> 1375
<211> 357
<212> nucleic acid
<213> Zea mays

<400> 1375

agttgatggt gtgaaagtcc ttcaactcga aaccgcagct ggtgcagcta ttcggttctt 60

cgacaaagcg attggaatta atgttccccg ctcaaggttt ctcccagtga aggctacatc 120

tgatctgttg cttgtgcagt ctgatcttta caccttggtt gatggctttg tcatccgcaa 180

cccatccaga gcgaatccag ctaacccttc aattgagctt ggacctgagt tcaagaaggt 240

tgccaatttc cttgctcggt tcaagtccat ccccagcata gttgagcttg acagcttgaa 300

ggtttctggt gatgtctggt ttggctctgg aattacactc aagggcaagg tgacaat 357

<210> 1376

<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1376

gcgagaacga gaagtccggg ttcatcagcc tcgtgtcacg gtacctcagt ggggacgctg 60

acagatcgag tggagcaaga tccagacccc tacggatgag gtggtggtgc cctacgatac 120

cgtcgcgtcg cctcccgaag atctcgagga gacgaagaag ctgctggata agctcgttgt 180

gctcaagctt aacggagggc tcgggacgac catgggctgc actgggccca agtctgtcat 240

tgaagtccgc aatgggttca cattccttga ccttattgtg attcaaattg agtccctgaa 300

caagaagtat ggat 314

<210> 1377
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1377

ctacgatacc gtcgcgtcgc ctcccgaaga tctcgaggag acgaagaagc tgctggataa 60

gctcgttgtg ctcaagctta acggagggct cgggacgacc atgggctgca ctgggcccaa 120

gtctgtcatt gaagtccgca atgggttcac attccttgac cttattgtga ttcaaattga 180

gtccctgaac aagaagtatg gatgcaatgt ccctttactt ctgatgaact ctttcaacac 240

ccatgatgac acacagaaga ttgttgagaa gtattccaac tccaacatcg aaattcatac 300

tttcaatca 309

<210> 1378
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1378

gttgagaagt attccaactc caacattgaa attcatactt tcaatcagag ccagtatcct 60

cgcattgtta ccgaggactt cttgccactt ccaagcaaag ggaaatctgg gaaggatggc 120

tggtatcctc caggccatgg tgatgtgttc cctctttgga ataacagtgg aaaactcgac 180

atcttattgg ctcagggcaa ggagtatgtc ttcgttgcta actcagacaa cttgggtgct 240

atagtcgaca tcaagatcct gaaccatctg atcaataacc agaatgaata ctgcatggag 300

gt 302

<210> 1379
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 1379

ccacgcgtcc gggagcagat cgagtggagc aagatccaga cccctacgga tgaggtggtg 60

gtgccctacg ataccgtcgc gtcgcctccc gaagatctcg aggagacgaa gaagctgctg 120

gataagctcg ttgtgctcaa gcttaacgga gggctcggga cgaccatggg ctgcactggg 180

cccaagtctg tcattgaagt ccgcaatggg ttcacattcc ttgaccttat tgtgattcaa 240

attgagtccc tgaacaagaa gtatggatgc aatgtccctt tacttctgat gaactctttc 300

aacacccatg atgacacac 319

<210> 1380
<211> 322
<212> nucleic acid
<213> Zea mays

<400> 1380

cccacgcgtc cgatcttatt ggctcagggc aaagagtatg tctttgttgc aaactcagac 60

aacttgggtg ctatagtcga catcaagatc ctaaaccatc tgatcaataa ccagaacgag 120

tactgcatgg aggttactcc aaagacgctg gctgacgtta agggtggcac tctcatctct 180

tacgaaggaa gagttcagct tttggagatt gcccaagtac ccgatgagca tgtgaatgaa 240

tttaaatcaa tcgagaagtt taagatattc aacactaaca acttgtgggt gaaccttaaa 300

gctatcaaga gactcgtaga gg 322

<210> 1381
<211> 328
<212> nucleic acid
<213> Zea mays

<400> 1381

ggttaagata ttcaacacta acaacttgtg ggtgaacctt aaagctgtca agagactagt 60

agaggctgag gcacttaaga tggaaattat tccaaacccc aaggaagttg atggtgtgaa 120

agtccttcaa tttgaaactg cagctggtgc agctattcgt ttctttgaca aagcgattgg 180

aattaatgtt ccccgctcaa gatttctccc agtgaaggct acatctgatt tattgcttgt 240

gcagtctgat ctttacacct tggtcgatgg ctttgtcatc cgcaacccat ccagaacgaa 300

tccagctaat ccttcgattg agcttgga 328

<210> 1382
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1382

aattaatgtt ccccgctcaa ggtttctccc agtgaaggct acatctgatc tgttgcttgt 60

gcagtctgat ctttacacct tggttgatgg ctttgtcatc cgcaacccat ccagagcgaa 120

tccagctaac ccttcaattg agcttggacc tgagttcaag aaggttgcca atttccttgc 180

tcggttcaag tccatcccca gcatagttga gcttgacagc ttgaaggttt ctggtgatgt 240

ctggtttggc tctggaatta cactcaaggg caaggtgaca attatc 286

<210> 1383
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1383

caagagactc gtagagctga ggcacttaag atggaaatta ttccaaaccc caaggaagtt 60

gatggtgtga aagtccttca actcgaaacc gcagctggtg cagctattcg gttcttcgac 120

aaagcgattg gaattaatgt tccccgctca aggtttctcc cagtgaaggc tacatctgat 180

ctgttgcttg tgcagtctga tctttacacc ttggttgatg gctttgtcat ccgcaaccca 240

tccagagcga atccagctaa cccttcaatt gagcttggac ctgagttcaa gaaggttgcc 300

aa 302

<210> 1384
<211> 305
<212> nucleic acid
<213> Zea mays

<400> 1384

gcactctcat ctcttacgaa ggaagagttc agcttttgga gattgcccaa gtacccgatg 60

agcatgtgaa tgaatttaaa tcaatcgaga agtttaagat attcaacact aacaacttgt 120

gggtgaacct taaagctatc aagagactcg tagaggctga ggcacttaag atggaaatta 180

ttccaaaccc caaggaagtt gatggtgtga aagtccttca actcgaaacc gcagctggtg 240

cagctattcg gttcttcgac aaagcgattg gaattaatgt tccccgctca aggtttctcc 300

cagtg 305

<210> 1385
<211> 321
<212> nucleic acid
<213> Zea mays

<400> 1385

cggacgcgtg gggacgagaa gctcgataag cttcgcgccg aggtcgccaa gctcgaccag 60

atcagcgaga acgagaagtc cgggttcatc agcctcgtgt cacggtacct cagtcgggag 120

gcggacagat cgagtggagc aagatccaga cccctacgga tgaggtggtg gtgccctacg 180

ataccgtcgc gtcgcctccc gaagatctcg aggagacgaa gaagctgctg gataagctcg 240

ttgtgctcaa gcttaacgga gggctcggga cgaccatggg ctgcactggg cccaagtctg 300

tcattgaagt ccgcaatggg t 321

<210> 1386
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1386

ctcgagccgc tctgcagtcc ctgaacaaga agtatggatg caatgtccct ttacttctga 60

tgaactcttt caacacccat gatgacacac agaagattgt tgagaagtat tccaactcca 120

acatcgaaat tcatactttc aatcagagcc agtatcctcg cattgttacc gaggacttct 180

tgccacttcc cagcaaaggg aaatctggga aggatggctg gtatcctcct ggtcatggtg 240

atgtgtttcc ttctttgaat aacagcggaa aacgtgacat cttattggct cagggcaagg 300

agtatgt 307

<210> 1387
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1387

cggagggctc gggacgacca tgggctgcac tgggcccaag tctgtcattg aagtccgcaa 60

tgggtacaca ttccttgacc ttattgtgat tcaaattgag tccctgaaca agaagtatgg 120

atgcaatgtc cctttacttc tgatgaactc tttcaacacc catgatgaca cacagaagat 180

tgttgagaag tattccaact ccaacatcga aattcatact ttcatttcag agccagtatc 240

ctcgcattgt taccgaggac ttcttgccac ttccca 276

<210> 1388
<211> 298
<212> nucleic acid
<213> Zea mays

<400> 1388

tgtcccttta cttctgatga actctttcaa cacccatgat gacacacaga agattgttga 60

gaagtattcc aactccaaca tcgaaattca tactttcaat cagagccagt atcctcgcat 120

tgttaccgag gacttcttgc cacttcccag caaagggaaa tctgggaagg atggctggta 180

tcctcctggt catggtgatg tgtttccttc tttgaataac agcggaaaac ttgacatctt 240

attggctcag ggcaaggagt atgtctttgt tgcaaactca gacaacttgg gtgctata 298

<210> 1389
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1389

attgttgaga agtattccaa ctccaacatc gaaattcata ctttcaatca gagccagtat 60

cctcgcattg ttaccgagga cttcttgcca cttcccagca aagggaaatc tgggaaggat 120

ggctggtatc ctcctggtca tggtgatgtg tttccttctt tgaataacag cggaaaactt 180

gacatcttat tggctcaggg caaggagtat gtctttgttg caaactcaga caacttgggt 240

gctatagtcg acatcaagat cctaaaccat ctgatcaata accagaa 287

<210> 1390
<211> 291
<212> nucleic acid
<213> Zea mays

<400> 1390

ggaggttact ccaaaaacat tggctgatgt taaaggcggt actctcatct cttacgaagg 60

aagagttcag cttttggaga ttgcccaagt acctgatgag catgtgaatg agtttaaatc 120

aatcgagaag tttaagatat tcaacactaa caacttgtgg gtgaacctta aagctgtcaa 180

gagactagta gaggctgagg cacttaagat ggaaattatt ccaaacccca aggaagttga 240

tggtgtgaaa gtccttcaac ttgaaactgc agctggtgca gctattcgtt t 291

<210> 1391
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1391

gcttaacgga gggctcggga cgaccatggg ctgcactggg cccaagtctg tcattgaagt 60

ccgcaatggg ttcacattcc ttgaccttat tgtgattcaa attgagtccc tgaacaagaa 120

gtatggatgc aatgtccctt tacttctgat gaactctttc aacacccatg atgacacaca 180

gaagattgtt gagaagtatt ccaactccaa catcgaaatt catactttca atcagagcca 240

gtatcctcgc attgtaaccg aggacttctt g 271

<210> 1392
<211> 340
<212> nucleic acid
<213> Zea mays

<400> 1392

tgggttcaca ttccttgacc ttattgtgat tcaaattgag tccctgaaaa agaagtatgg 60

atgcaatgtc gctttacttc tgatggacta tttcaacacc catgatgaca cacagaagat 120

tgttgagaag tattccaact ccaacatcga aattcatact ttcaatcaga gccagtatcc 180

tcgcattgtt accgaggact tcttgccact tcccagcaaa gggaaatctg ggaaggatgg 240

ctggtatcct cctggtcatg gtgatgtgtt tccctctgtt gaataacagc ggaaaacttg 300

acatcttatt ggctcagggc aaagagtatg tctttgttga 340

<210> 1393
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1393

agctcgttgt gctcaagctt aacggagggc tcgggacgac catgggctgc actgggccca 60

agtctgtcat tgaagtccgc aatgggttca cattccttga ccttattgtg attcaaattg 120

agtccctgaa caagaagtat ggatgcaatg tccctttact tctgatgaac tctttcaaca 180

cccatgatga cacacagaag attgttgaga agtattccaa ctccaacatc gaaattcata 240

ctttcaatca gagccag 257

<210> 1394
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1394

caaattgagt ccctgaacaa gaagtatgga tgcaatgtcc ccttacttct gatgaactct 60

ttcaacaccc atgatgacac acagaagatt gttgagaagt attccaactc caacatcgaa 120

attcatactt tcaatcagag ccagtatcct cgcattgtta ccgaggactt cttgccactt 180

cccagcaaag ggaaatctgg gaaggatggc tggtatcctc ctggtcatgg tgatgtgttt 240

ccttctttga ataacagcgg aaaacttga 269

<210> 1395
<211> 264
<212> nucleic acid
<213> Zea mays

<400> 1395

ctcgcattgt taccgaggac ttcttgccac ttccaagcaa agggaaatct gggaaggatg 60

gctggtatcc tccaggccat ggtgatgtgt tcccctcttt gaataacagt ggaaaactcg 120

acatcttatt ggctcagggc aaggagtatg tcttcgttgc taactcagac aacttgggtg 180

ctatagtcga catcaagatc ctgaaccatc tgatcaataa ccagaatgaa tactgcatgg 240

aggttactcc aaaaacattg gctg 264

<210> 1396
<211> 297
<212> nucleic acid
<213> Zea mays

<400> 1396

ggacgcgggc ttgtgcagtc tgatctttac accttggttg atggctttga gctccgcaac 60

ccatccagag cgaatccagc taacccttca attgagcttg gacctgagtt caagaaggtt 120

gccaatttcc ttgctcggtt caagtccatc cccagcatag ttgagcttga cagcttgaag 180

gtttctggtg atgtctggtt tggctctgga attacactca agggcaaggt gacaattatc 240

gccaagcctg gagtgaagtt ggagattcca gatggagacg tacttgagaa caaggat 297

<210> 1397
<211> 281
<212> nucleic acid
<213> Zea mays

<400> 1397

gaaagtcctt caactcgaaa ccgcagctgg tgcagctatt cggttcttcg acaaagcgat 60

tggaattaat gttccccgct caaggtttct cccagtgaag gctacatctg atctgttgct 120

tgtgcagtct gatctttaca ccttggttga tggctttgtc atccgcaacc catccagagc 180

gaatccagct aacccttcaa ttgagcttgg acctgagttc aagaaggttg ccaatttcct 240

tgctcggttc aagtccatcc ccagcatagt tgagcttgac a 281

<210> 1398
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1398

ccagaatgaa tactgcatgg aggttactcc aaaaacattg gctgatgtta aaggcggtac 60

tctcatctct tacgaaggaa gagttcagct tttggagatt gcccaagtac ctgatgagca 120

tgtgaatgag tttaaatcaa tcgagaagtt taagatattc aacactaaca acttgtgggt 180

gaaccttaaa gctgtcaaga gactagtaga ggctgaggca cttaagatgg aaattattcc 240

aaaccccaag gaagttgatg gtg 263

<210> 1399
<211> 288
<212> nucleic acid
<213> Zea mays

<400> 1399

cccacgcgtc cggcccaagt acccgatgag catgtgaatg aatttaaatc aatcgagaag 60

tttaagatat tcaacactaa caacttgtgg gtgaacctta aagctatcaa gagactcgta 120

gaggctgagg cacttaagat ggaaattatt ccaaacccca aggaagttga tggtgtgaaa 180

gtccttcaac tcgaaaccgc agctggtgca gctattcggt tcttcgacaa agcgattgga 240

attaatgttc cccgctcaag gtttctccca gtgaaggcta catctgat 288

<210> 1400
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1400

cccacgcgtc cgcaagaagt atggatgcaa tgtcccttta cttctgatga actctttcaa 60

cacccatgat gacacacaga agattgttga gaagtattcc aactccaaca tcgaaattca 120

tactttcaat cagagccagt atcctcgcat tgttaccgag gacttcttgc cacttcccag 180

caaagggaaa tctgggaagg atggctggta tcctcctggt catggtgatg tgtttccctc 240

tttgaataac agcggaaaac ttgacatctt attggctc 278

<210> 1401
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1401

gcgagaacga gaagtccggg ttcatcagcc tcgtgtcacg ctacctcagt ggggaagcgg 60

acagatcgag tggagcaaga tccagacccc tacggatgag gtggtggtgc cctacgatac 120

cgtcgcgtcg cctcccgaag atctcgagga gacgagaagc tgctggataa gctcgttgtg 180

ctcaagctta acggagggct cgggacgacc atgggctgca ctgggcccaa gtctgtcatt 240

gaagtccgca atgggttcac attccttgat cttattgt 278

<210> 1402
<211> 282
<212> nucleic acid
<213> Zea mays

<400> 1402

atctttacac cttggttgat ggctttgtca tccgcaatcc atccagagcg aatccagcta 60

acccttcgat tgagcttgga cctgagttca agaaggttgc caatttcctt gctcggttca 120

agtccatccc cagcatcgtc gagcttgaca gcttgaaggt ttctggtgat gtctggtttg 180

gttctggaat tacgctcaag ggcaaggtga caatcaccgc caagtctgga gtgaagttgg 240

aggttccaga tggagctgta tatgaaaaca aggatgtcaa tg 282

<210> 1403
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1403

gtccttcaac tcgaaaccgc agctggtgca gctattcggt tcttcgacaa agcgattgga 60

attaatgttc cccgctcaag gtttctccca gtgaaggcta catctgatct gttgcttgtg 120

cagtctgatc tttacacctt ggttgatggc tttgtcatcc gcaacccatc cagagcgaat 180

ccagctaacc cttcaattga gcttggacct gagttcaaga aggttgccaa tttccttgct 240

cggttcaagt ccatccccag catagttgag 270

<210> 1404
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1404

ggaggttact ccaaagacgc tggctgacgt taagggtggc actctcatct cttacgaagg 60

aagagttcag cttttggaga ttgcccaagt acccgatgag catgtgaatg aatttaaatc 120

aatcgagaag tttaagatat tcaacactaa caacttgtgg gtgaacctta aagctatcaa 180

gagactcgta gaggctgagg cacttaagat ggaaattatt ccaaacccca aggaagttga 240

tggtgtgaaa gtccttcaac tcgaaaccgc 270

<210> 1405
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1405

tgatgacaca cagaagattg ttgagaagta ttccaactcc aacatcgaaa ttcatacttt 60

caatcagagc cagtatcctc gcattgttac cgaggacttc ttgccacttc ccagcaaagg 120

gaaatctggg aaggatggct ggtatcctcc tggtcatggt gatgtgtttc cttctttgaa 180

taacagcgga aaacttgaca tcttattggc tcagggcaag gagtatgtct ttgttgcaaa 240

ctcagacaac ttgggtgcta tag 263

<210> 1406
<211> 263
<212> nucleic acid
<213> Zea mays

<400> 1406

gcaaggagta tgtctttgtt gcaaactcag acaacttggg tgctatagtc gacatcaaga 60

tcctaaacca tctgatcaat aaccagaacg agtactgcat ggaggttact ccaaagacgc 120

tggctgacgt taagggtggc actctcatct cttacgaagg aagagttcag cttttggaga 180

ttgcccaagt acccgatgag catgtgaatg aatttaaatc aatcgagaag tttaagatat 240

tcaacactaa caacttgtgg gtg 263

<210> 1407
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 1407

aagaagtatt ccaactccaa catcgaaatt catactttca atcagagcca gtatcctcgc 60

attgttaccg aggacttctt gccacttccc agcaaaggga aatctgggaa ggatggctgg 120

tatcctcctg gtcatggtga tgtgtttccc tctttgaata acagcggaaa acttgacatc 180

ttattggctc agggcaaaga gtatgtcttt gttgcaaact cagacaactg ggtgctata 240

gtcgacatca agatcctaaa ccatctgatc aat 273

<210> 1408
<211> 271
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (234)
<223>

<400> 1408

ccgcaatggg ttcacattcc ttgaccttat tgtgattcaa attgagtccc tgaacaagaa 60

gtaggatgca agtcctttac ttctgatgaa ctctttcaac acccatgatg acacacagaa 120

gattgttgag aagtattcca actccaacat cgaaattcat actttcaatc agagccagta 180

tcctcgcatt gttaccgagg acttcttgcc acttcccagc aaagggaaat ctgnggagga 240

tggctggtat cctcctggtc atggtgatgt g 271

<210> 1409
<211> 227
<212> nucleic acid
<213> Zea mays

<400> 1409

aagctatcaa gagactcgta gaggctgagg cacttaagat ggaaattatt ccaaacccca 60

aggaagttga tggtgtgaaa gtccttcaac tcgaaaccgc agctggtgca gctattcggt 120

tcttcgacaa agcgattgga attaatgttc cccgctcaag gtttctccca gtgaaggcta 180

catctgatct gttgcttgtg cagtctgatc tttacacctt ggttgat 227

<210> 1410
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 1410

aaaggcggta ctctcatctc ttacgaagga agagttcagc ttttggagat tgcccaagta 60

cctgatgagc atgtgaatga gtttaaatca atcgagaagt ttaagatatt caacactaac 120

aacttgtggg tgaaccttaa agctgtcaag agactagtag aggctgaggc acttaagatg 180

gaaattattc caaaccccaa ggaagttgat ggtgtgaaag tccttcaact tgaaactgca 240

gctggtgcag ctattcgttt ctttgacaaa gcg 273

<210> 1411
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1411

gcggacagat cgagtggagc aagatccaga cccctacgga tgaggtggtg gtgccctacg 60

ataccgtcgc gtcgcctccc gaagatctcg aggagacgaa gaagctgctg gataagctcg 120

ttgtgctcaa gcttaacgga gggctcggga cgaccatggg ctgcactggg cccaagtctg 180

tcattgaagt ccgcaatggg ttcacattcc ttgaccttat tgtgattcaa attgagtccc 240

tgaacaagaa gtatg 255

<210> 1412
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1412

agggcaagga gtatgtcttt gttgcaaact cagacaactt gggtgctata gtcgacatca 60

agatcctaaa ccatctgatc aataaccaga acgagtactg catggaggtt actccaaaga 120

cgctggctga cgttaagggt ggcactctca tctcttacga aggaagagtt cagcttttgg 180

agattgccca agtacccgat gagcatgtga atgaatttaa atcaatcgag aagtttaaga 240

tattcaacac taacaactt 259

<210> 1413
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1413

tcctcgcatt gttaccgagg acttcttgcc acttcccagc aaagggaaat ctgggaagga 60

tggctggtat cctcctggtc atggtgatgt gtttccctct ttgaataaca gcggaaaact 120

tgacatctta ttggctcagg gcaaagagta tgtctttgtt gcaaactcag acaacttggg 180

tgctatagtc gacatcaaga tcctaaacca tctgatcaat aaccagaacg agtactgcat 240

ggaggttact ccaaagacgc tggct 265

<210> 1414
<211> 278
<212> nucleic acid
<213> Zea mays

<400> 1414

caagtacccg atgagcatgt gaatgaattt aaatcaatcg agaagtttaa gatattcaac 60

actaacaact tgtgggtgaa ccttaaagct atcaagagac tcgtagaggc tgaggcactt 120

aagatggaaa ttattccaaa ccccaaggaa gttgatggtg tgaaagtcct tcaactcgaa 180

accgcagctg gtgcagctat tcggttcttc gacaaagcga ttggaattaa tgttccgcgc 240

tcaaggtttc tcccagtgaa ggctacatct gatctgtt 278

<210> 1415
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1415

gggaaatctg ggaaggatgg ctggtatcct cctggtcatg gtgatgtgtt tccttctttg 60

aataacagcg gaaaacttga catcttattg gctcagggca aggagtatgt ctttgttgca 120

aactcagaca acttgggtgc tatagtcgac atcaagatcc taaaccatct gatcaataac 180

cagaacgagt actgcatgga ggttactcca aagacgctgg ctgacgttaa gggtggcact 240

ctcatctctt acgaaggaag agttcagct 269

<210> 1416
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1416

aagctatcaa gagactcgta gaggctgagg cacttaagat ggaaattatt ccaaacccca 60

aggaagttga tggtgtgaaa gtccttcaac tcgtaaccgc agctggtgca gctattcggt 120

tcttcgacta agcgattgga ataatgttcc ccgcacatag aatctcccag tgaaggctac 180

atctgatctg ttgcttgtgc agtctgatct ttacaccttg gttgatggct ttgtcatccg 240

caacccatcc agagcgaatc cagctaaccc ttcaattgag cttggacctg agt 293

<210> 1417
<211> 329
<212> nucleic acid
<213> Zea mays

<400> 1417

ccgcaatcca tccagagcga atccagctaa cccttcgatt gagcttggac ctgagttcaa 60

gaaggttgcc aatttccttg ctcggttcaa gtccatcccc agcatcgtcg agcttgacag 120

cttgaaggtt tctggtgatg tctggtttgg ttctggaatt acgctcaagg gcaaggtgac 180

aatcaccgcc aagtctggag tgaagttgga ggttccagat ggagctgtat ttgaaaacaa 240

ggatgtcaat ggccctgagg atctttaagc tagcttgccg tcaccagttt ttcccaagga 300

tttgtcaata ggagcagcca acccaaatc 329

<210> 1418
<211> 262
<212> nucleic acid
<213> Zea mays

<400> 1418

gtgaaagtcc ttcaacttga aactgcagct ggtgcagcta ttcgtttctt tgacaaagcg 60

attggaatta atgttccccg ctcaagattt ctcccggtga aggctacatc tgatttattg 120

cttgtgcagt ctgatcttta caccttggtt gatggctttg tcatccgcaa tccatccaga 180

gcgaatccag ctaacccttc gattgagctt ggacctgagt tcaagaaggt tgccaatttc 240

cttgctcggt tcaagtccat cc 262

<210> 1419
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1419

gttaagggtg gcactctcat ctcttacgaa ggaagagttc agcttttgga gattgcccaa 60

gtacccgatg agcatgtgaa tgaatttaaa tcaatcgaga agtttaagat attcaacact 120

aacaacttgt gggtgaacct taaagctatc aagagactcg tagaggctga ggcacttaag 180

atggaaatta ttccaaaccc caaggaagtt gatggtgtga aagtccttca actcgaaacc 240

gcagctggtg cagctattc 259

<210> 1420
<211> 252
<212> nucleic acid
<213> Zea mays

<400> 1420

ctttacacct tggttgatgg ctttgtcatc cgcaacccat ccagagcgaa tccagctaac 60

ccttcaattg agcttggacc tgagttcaag aaggttgcca atttccttgc tcggttcaag 120

tccatcccca gcatagttga gcttgacagc ttgaaggttt ctggtgatgt ctggtttggc 180

tctggaatta cactcaaggg caaggtgaca attatcgcca agcctggagt gaagttggag 240

attccagatg ga 252

<210> 1421
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1421

cgtttcgaag cctcgcgagc cccgacgatg gccaccaccg cggtgtcggt cgacgagaag 60

ctcgataagc ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa cgagaagtcc 120

gggttcatca gcctcgtgtc acggtacctc agtggggagg cggacagatc gagtggagca 180

agatccagac ccctacggat gacgtggtgg tgccctacga taccgtcgcg tcgcctcccg 240

aagatctcga ggagacgaag aagctgctgg ataagctcgt tgtgctcaag cttaacggag 300

gg 302

<210> 1422
<211> 249
<212> nucleic acid
<213> Zea mays

<400> 1422

cggctcgagt caaagggtat ctgggctctg gttgaaagta tgaatttcga tgttggagtt 60

ggaatacttc tcaacaatct tctgtgtgtc atcatgggtg ttgaaagagt tcatcagaag 120

taaagggaca ttgcatccat acttcttgtt cagggactca atttgaatca caataaggtc 180

aaggaatgtg aacccattgc ggacttcaat gacagacttg ggcccagtgc agcccatggt 240

cgtcccgag 249

<210> 1423
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1423

ccttaagata ttcaagacta acaacttgtg ggtgaacctt aaagctatca agagactcgt 60

agacgctgag gcacttaaga tggcgattat tccaaacccc aaggaagttg atggtgtgaa 120

agtccttcaa ctcgaaaccg cagctggtgc agctattcgg ttcttcgaca aagcgattgg 180

aattaatgtt ccccgctcaa ggtttctccc agtgaaggct acatctgatc tgttgcttgt 240

gcagtctgat ctttacagct tggttgatgg ctttgtcatc cgc 283

<210> 1424
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1424

agcgaatcca gctaaccctt caattgagct tggacctgag ttcaagaagg ttgccaattt 60

ccttgctcgg ttcaagtcca tccccagcat agttgagctt gacagcttga aggtttctgg 120

tgatgtctgg tttggctctg gaattacact caagggcaag gtgacaatta tcgccaagcc 180

tggagtgaag ttggagattc cagatggaga cgtacttgag aacaaggatg tcaatggccc 240

tgaggatctt taagcaatgt ttgtcatcac 270

<210> 1425
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 1425

tggagattgc ccaagtacct gatgagcatg tgaatgagtt taaatcaatc gagaagttta 60

agatattcaa cactaacaac ttgtgggtga accttaaagc tgtcaagaga ctagtagagg 120

ctgaggcact taagatggaa attattccaa accccaagga agttgatggt gtgaaagtcc 180

ttcaacttga aactgcagct ggtgcagcta ttcgtttctt tgacaaagcg attggagtta 240

atgttccccg ctcaagat 258

<210> 1426
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1426

gcagcttaaa gctatcaaga gactcgtaga ggctgaggca cttaagatgg aaattattcc 60

aaaccccaag gaagttgatg gtgtgaaagt ccttcaactc gaaaccgcag ctggtgcagc 120

tattcggttc ttcgacaaag cgattggaat taatgttccc cgctcaaggt ttctcccagt 180

gaaggctaca tctgatctgt tgcttgtgca gtctgatctt tacaccttgg ttgatggctt 240

tgtcatccgc aacccatcca gagcgaatcc agctaaccct tcaattgagc ttggagctga 300

gttcaag 307

<210> 1427
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 1427

ctacatctga tctgttgctt gtgcagtctg atctttacac cttggttgat ggctttgtca 60

tccgcaaccc atccagagcg aatccagcta acccttcaat tgagcttgga cctgagttca 120

agaaggttgc caatttcctt gctcggttca agtccatccc cagcatagtt gagcttgaca 180

gcttgaaggt ttctggtgat gtctggtttg gctctggaat tacactcaag 230

<210> 1428
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1428

ggcacttaag atggaaatta ttccaaaccc caaggaagtt gatggtgtga aagtccttca 60

actcgaaacc gcagctggtg cagctattcg gttcttcgac aaagcgattg gaattaatgt 120

tccccgctca aggtttctcc cagtgaaggc tacatctgat ctgttgcttg tgcagtctga 180

tctttacacc ttggttgatg gctttgtcat ccgcaaccca tccagagcga atccagctaa 240

cccttcaatt gagcttggac ctgagttcaa g 271

<210> 1429
<211> 243
<212> nucleic acid
<213> Zea mays

<400> 1429

cccacgcgtc cggtgtttcc ttcgttgaat aacagcggaa aacttgacat cttattggct 60

cagggcaagg agtatgtctt tgttgcaaac tcagacaact tgggtgctat agtcgacatc 120

aagatcctaa accatctgat caataaccag aacgagtact gcatggaggt tactccaaag 180

acgctggctg acgttaaggg tggcactctc atctcttacg aaggaagagt tcagcttttg 240

gag 243

<210> 1430
<211> 317
<212> nucleic acid
<213> Zea mays

<400> 1430

ggcacacaca ccacaccaca cctcctcgct tccactccgc tcgtctgaca tctcgtcccg 60

tcctttcgtt tcgaagcctc gcgagccccg acgatggcca ccgccgcggt gtcggtcgac 120

gagaagctcg acaagcttcg cgccgaggtc gccaagctcg accagatcag cgagaacgag 180

aagtccgggt tcatcagcct cgtgtcacgc tacctcagtg gggaagcgga gcagatcgag 240

tggagcaaga tccagacccc tacggatgag gtggtggtgc cctacgatac cgtcgcgtcg 300

cctcccgaag atctcga 317

<210> 1431
<211> 242
<212> nucleic acid
<213> Zea mays

<400> 1431

cttcgacaaa gcgattggaa ttaatgttcc ccgctcaagg tttctcccag tgaaggctac 60

atctgatctg ttgcttgtgc agtctgatct ttacaccttg gttgatggct ttgtcatccg 120

caacccatcc agagcgaatc cagctaaccc ttcaattgag cttggacctg agttcaagaa 180

ggttgccaat ttccttgctc ggttcaagtc catccccagc atagttgagc ttgacagctt 240

ga 242

<210> 1432
<211> 214
<212> nucleic acid
<213> Zea mays

<400> 1432

aaggacttct tgccacttcc aagcaaaggg aaatctggga aggatggctg gtatcctcca 60

ggccatggtg atgtgttccc ctctttgaat aacagtggaa aactcgacat cttattggct 120

cagggcaagg agtatgtctt cgttgctaac tcagacaact tgggtgctat agtcgacatc 180

aagatcctga accatctgat caataaccag aatg 214

<210> 1433
<211> 318
<212> nucleic acid
<213> Zea mays

<400> 1433

aggcagacgg cacacacacc acaccacacc tcctcgcttc cactccgctc gtctgacatc 60

tcgtcccgtc ctttcgtttc gaagcctcgc gagcccgac gatggccacc gccgcggtgt 120

cggtcgacga gaagctcgac aagcttcgcg ccgaggtcgc caagctcgac cagatcagcg 180

agaacgagaa gtccgggttc atcagcctcg tgtcacgcta cctcagtggg gaagcggaca 240

gatcgagtgg agcaagatcc agacccctac ggatgaggtg gtggtgccct acgataccgt 300

cgcgtcgcct cccgaaga 318

<210> 1434
<211> 234
<212> nucleic acid
<213> Zea mays

<400> 1434

gcacgagggg aaatctggga aggatggctg gtatcctcct ggtcatggtg atgtgtttcc 60

ttctttgaat aacagcggaa aacttgacat cttattggct cagggcaagg agtatgtctt 120

tgttgcaaac tcagacaact tgggtgctat agtcgacatc aagatcctaa accatctgat 180

caataaccag aacgagtact gcatggaggt tactccaaag acgctggctg acgt 234

<210> 1435
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1435

cggtactctc atctcttacg aaggaagagt tcagcttttg gagattgccc aagtacctga 60

tgagcatgtg aatgagttta aatcaatcga gaagtttaag atattcaaca ctaacaactt 120

gtgggtgaac cttaaagctg tcaagagact agtagaggct gaggcactta agatggaaat 180

tattccaaac cccaaggaag ttgatggtgt gaaagtcctt caacttgaaa ctgcagctgg 240

tgcagctatt cgttt 255

<210> 1436
<211> 302
<212> nucleic acid
<213> Zea mays

<400> 1436

cacaccacac cacacctcct cgcttccact ccgctcgtct gacatctcgt cccgtccttt 60

cgtttcgaag cctcgcgagc cccgacgatg gccaccgccg cggtgtcggt cgacgagaag 120

ctcgacaagc ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa cgagaagtcc 180

gggttcatca gcctcgtgtc acgctacctc agtggggaag cggagcagat cgagtggagc 240

aagatccaga cccctacgga tgaggtggtg gtgccctacg ataccgtcgc gtcgcctccc 300

ga 302

<210> 1437
<211> 312
<212> nucleic acid
<213> Zea mays

<400> 1437

cacaccacac ctcctcgctt gcactccgct cgtctgacat ctcgtcccgt cctttcgttt 60

cgaagcctcg cgagccccga cgatggccac caccgcggtg tcggtcgacg agaagctcga 120

taagcttcgc gccgaggtcg ccaagctcga ccagatcagc gagaacgaga agtccgggtt 180

catcagcctc gtgtcacggt acctcagtgg ggaggcggac agatcgagtg gagcaagatc 240

cagaccccta cggatgaggt ggtggtgccc tacgatacca tcgcgtcgcc tccgaagatc 300

tcgaggagac ga 312

<210> 1438
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 1438

gcacgagggg aaatctggga aggatggctg gtatcctcct ggtcatggtg atgtgtttcc 60

ttctttgaat aacagcggaa aacttgacat cttattggct cagggcaagg agtatgtctt 120

tgttgcaaac tcagacaact tgggtgctat agtcgacatc aagatcctaa accatctgat 180

caataaccag aacgagtact gcatggaggt tactccaaag acgct 225

<210> 1439
<211> 230
<212> nucleic acid
<213> Zea mays

<400> 1439

cccacgcgtc cgggctggta tcctcctggt catggtgatg tgtttccttc tttgaataac 60

agcggaaaac ttgacatctt attggctcat ggcaaggagt atgtctttgt tgcaaactca 120

gacaacttgg gtgctatagt cgacatcaag atcctaaacc atctgatcaa taaccagaac 180

gagtactgca tggaggttac tccaaagacg ctggctgacg ttaagggtgg 230

<210> 1440
<211> 309
<212> nucleic acid
<213> Zea mays

<400> 1440

cacacaccac accacacctc ctcgcttcca ctccgctcgt ctgacatctc gtcccgtcct 60

ttcgtttcga agcctcgcga gccccgacga tggccaccgc cgcggtgtcg gtcgacgaga 120

agctcgacaa gcttcgcgcc gaggtcgcca agctcgacca gatcagcgag aacgagaagt 180

ccgggttcat cagcctcgtg tcacgctacc tcagtgggga agcggacaga tcgagtggag 240

caagatccag acccctacgg atgaggtggt ggtgcctacg ataccgtcag cgtcgctccg 300

aagatctcg 309

<210> 1441
<211> 254
<212> nucleic acid
<213> Zea mays

<400> 1441

agtacttcaa cttgaaactg cagctggtgc agctattcgt ttctttgaca aagcgattgg 60

aattaatgtt ccccgctcaa gatttctccc ggtgaaggct acatctgatt tattgcttgt 120

gcagtctgat ctttacacct tggttgatgg ctttgtcatc cgcaatccat ccagagcgaa 180

tccagctaac ccttcgattg agcttggacc tgagttcaag aaggttgcca atttccttgc 240

tcggttcaag tcca 254

<210> 1442
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1442

acacacacca caccacacct cctcgcttgc actccgctcg tctgacatct cgtcccgtcc 60

tttcgtttcg aagcctcgcg agccccgacg atggccacca ccgcggtgtc ggtcgacgag 120

aagctcgata agcttcgcgc cgaggtcgcc aagctcgacc agatcagcga gaacgagaag 180

tccgggttca tcagcctcgt gtcacggtac ctcagtgggg aggcggagca gatcgagtgg 240

agcaagatcc agacccctac ggatgaggtg gtggtgccct acgataccgt cgcgtcgcct 300

cccgaaa 307

<210> 1443
<211> 203
<212> nucleic acid
<213> Zea mays

<400> 1443

gaacaagaag tatggatgca atgtcccttt acttctgatg aactctttca acacccatga 60

tgacacacag aagattgttg agaagtattc caactccaac atcgaatttc atactttcaa 120

tcagagccag tatcctcgca ttgttaccga ggacttcttg ccacttccca gcaaagggaa 180

atctgggaag gatggctggt atc 203

<210> 1444
<211> 287
<212> nucleic acid
<213> Zea mays

<400> 1444

gagttcaaga aggttgccaa tttccttggt cggttcaagt ccatccccag catagttgag 60

cttgacagct tgaaggtttc tggtgatgtc tggtttggct ctggaattac actcaagggc 120

aaggtgacaa ttatcgccaa gcctggagtg aagttggaga ttccagatgg agacgtactt 180

gagaacaagg atgtcaatgg ccctgaggat ctttaagcaa tgtttatcat caccagtttt 240

cccaaggaca tgtcacagga actgccaagc ctaatcactc ctactga 287

<210> 1445
<211> 239
<212> nucleic acid
<213> Zea mays

<400> 1445

cccacgcgtc cgcccacgcg tccgacaact tgtgggtgaa ccttaaagct gtcaagagac 60

tagtagaggc tgaggcactt aagatggaaa ttattccaaa ccccaaggaa gttgatggtg 120

tgaaagtcct tcaacttgaa actgcagctg gtgcagctat tcgtttcttt gacaaagcga 180

ttggaattaa tgttccccgc tcaagatttc tcccggtgaa ggctacatct gatttattg 239

<210> 1446
<211> 269
<212> nucleic acid
<213> Zea mays

<400> 1446

cagcgcgcgt acgtgagcgc gcggttgggc tcgagcgacc ttagagctat caagagagtc 60

gtagagggct gaggcacttg agcatggaga ttgttccaga ccccaaggga gttgatggtg 120

tgagagtcct tcaactcgaa accgcagctg gtgcagctat tcggttcttc gacaaagcga 180

ttggaattaa tgttccccgc tcaaggtttc tcccagtgaa ggctacatct ggtctgttgc 240

ttgtgcagtc tggtctttac agcttggtt 269

<210> 1447
<211> 224
<212> nucleic acid
<213> Zea mays

<400> 1447

cggaccgtgg gccttaaagc tatcaagaga ctcgtagagg ctgaggcact taagatggaa 60

attattccaa accccaagga agttgatggt gtgaaagtcc ttcaactcga aaccgcagct 120

ggtgcagcta ttcggttctt cgacaaagcg attggaatta atgttccccg ctcaaggttt 180

ctcccagtga aggctacatc tgatctgttg cttgtgcagt ctga 224

<210> 1448
<211> 273
<212> nucleic acid
<213> Zea mays

<400> 1448

agaaggttgc caatttcctt gctcggttca agtccatccc cagcatagtt gagcttgaca 60

gcttgaaggt ttctggtgat gtctggtttg gctctggaat tacactcaag ggcaaggtga 120

caattatcgc caagcctgga gtgaagttgg agattccaga tggagacgta cttgagaaca 180

aggatgtcaa tggccctgag gatctttaag caatgtttgt catcaccagt tttcccaag 240

gacatgtcac aggaactgcc aagcctagtc act 273

<210> 1449
<211> 293
<212> nucleic acid
<213> Zea mays

<400> 1449

gaaggttgcc aatttccttg ctcggttcaa gtccatcccc agcatcgtcg agcttgacag 60

cttgaaggtt tctggtgatg tctggtttgg ttctggaatt acgctcaagg gcaaggtgac 120

aatcaccgcc aagtctggag tgaagttgga gattccagac ggagctgtat ttgaaaacaa 180

ggatgtcaat ggccctgagg atctttaagc tatgcttgcc gtcaccagtt tttcccaagg 240

acatgtcaat aggagctgcc aacccaaatc actcccgctg agctctacct ttt 293

<210> 1450
<211> 311
<212> nucleic acid
<213> Zea mays

<400> 1450

caccacacct cctcgcttgc actccgctcg tctgacatct cgtcacgtcc tttcgtttcg 60

aagcctcgcg agccccgacg atggccacca ccgcggtgtc ggtcgacgag aagctcgata 120

agcttcgcgc cgaggtcgcc aagctcgacc agatcagcga gaacgagaag tccgggttca 180

tcagcctcgt gtcacggtac ctcagtgggg aggcggacag atcgagtgga gcaagatcca 240

gacccctacg gatgaggtgg tggtgcccta cgataccgtc gcgtacgctc ccgaagatct 300

cgaggagacg a 311

<210> 1451
<211> 277
<212> nucleic acid
<213> Zea mays

<400> 1451

cacaccacac ctcctcgctt gcactccgct cgtctgacat ctcgtcccgt cctttcgttt 60

cgaagcctcg cgagccccga cgatggccac caccgcggtg tcggtcgacg agaagctcga 120

taagcttcgc gccgaggtcg ccaagctcga ccagatcagc gagaacgaga agtccgggtt 180

catcagcctc gtgtcacggt acctcagtgg ggaggcggac agatcgagtg gagcaagatc 240

cagaccccta cggatgaggt ggtggtgccc tacgata 277

<210> 1452
<211> 220
<212> nucleic acid
<213> Zea mays

<400> 1452

ccaagtacct gatgagcatg tgaatgagtt taaatcaatc gagaagttta agatattcaa 60

cactaacaac ttgtgggtga accttaaagc tgtcaagaga ctagtagagg ctgaggcact 120

taagatggaa attattccaa accccaagga agttgatggt gtgaaagtcc ttcaatttga 180

aactgcagct ggtgcagcta ttggtttctt agacaaagcg 220

<210> 1453
<211> 199
<212> nucleic acid
<213> Zea mays

<400> 1453

gcaagatcca gacccctacg gatgaggtgg tggtgcccta cgataccgtc gcgtcgcctc 60

ccgaagatct cgaggagacg aagaagctgc tggataagct cgttgtgctc aagcttaacg 120

gagggctcgg gacgaccatg ggctgcactg ggcccaagtc tgtcattgaa gtccgcaatg 180

ggttcacatt cctggacct 199

<210> 1454
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1454

aagttgccaa tttccttgct cggttcaagt ccatccccag catagttgag cttgacagct 60

tgaaggtttc tggtgatgtc tggtttggct ctggaattac actcaagggc aaggtgacaa 120

ttatcgccaa gcctggagtg aagttggaga ttccagatgg agacgtactt gagaacaagg 180

atgtcaatgg ccctgaggat ctttaagcaa tgtttgtcat caccagtttt tcccaaggac 240

atgtcacagg aactgccga 259

<210> 1455
<211> 294
<212> nucleic acid
<213> Zea mays

<400> 1455

cacacctcct cgcttgcact ccgctcgtct gacatctcgt cccgtccttt cgtttcgaag 60

cctcgcgagc cccgacgatg gccaccaccg cggtgtcggt cgacgagaag ctcgataagc 120

ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa cgagaagtcc gggttcatca 180

gcctcgtgtc acggtacctc agtggggagg cggacagatc gagtggagca agatccagac 240

ccctacggat gacgtggtgg tgccctacga taccgtcgcg tcgcctcccg aaga 294

<210> 1456
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1456

accacacaac ctcgcttcca caccgctcgt ctgacatatc gtcccgtcct ttcgtttcga 60

agcctcgcga gcaccgacga tagccaccgc cgcggtgtcg gtcgacgaga agctcgacaa 120

gcttcgcgcc gaggtcgcca agctcgacca gatcagcgag aacgagaaga ccgggttcat 180

cagcctcgtg tcacgctacc tcagtaggga agcggagcag atcgagtgga gcaagatcca 240

gacacctacg gatgaggtgg tggtgcccta cgataccgtc gcgtcgcctc ccgaagatct 300

cgaggag 307

<210> 1457
<211> 270
<212> nucleic acid
<213> Zea mays

<400> 1457

cggacgctgg gttctgaggc tcgcgaaccc cgacgatggc cgccaccgcg gtgtcggtcg 60

acgagaagct cgacaagctt cgcgccgagg tcgccaaact caaccagatc agcgagaacg 120

agaagtccgg gttcatcagc ctcgtgtcac gttacctcag tggggaggcg gacagatcga 180

gtggagcaag atccagaccc cgaccgatga ggtggtggtg ccgtacgata tcctcgcgtc 240

acctactgaa gatctcgagg agacgaagaa 270

<210> 1458
<211> 265
<212> nucleic acid
<213> Zea mays

<400> 1458

cagcccctcc tcgctcgcac tccgctcgac tgacatctcc tcccgtcctt tcgtttctga 60

ggctcgcgaa ccccgacgat ggccgccacc gcggtgtcgg tcgacgagaa gctcgacaag 120

cttcgcgccg aggtcgccaa actcaaccag atcagcgaga acgagaagtc cgggttcatc 180

agcctcgtgt cacgttacct cagtggggag gcggagcaga tcgagtggag ctagatccag 240

accccgaccg catgagtggt ggtgc 265

<210> 1459
<211> 307
<212> nucleic acid
<213> Zea mays

<400> 1459

ggacctgggc ggcagacggc acacacacca caccacacct cctcgcttcc actccgctcg 60

actgacatct cgtcccgtcc tttcgtttcg aagcctcgcg agccccgacg atggccaccg 120

ccgcggtgtc ggtcgacgag aagctcgaca agcttcgcgc cgaggtcgcc aagctcgacc 180

agatcagcga gaacgagaag tccgggttca tcagcctcgt gtcacgctac ctcagtgggg 240

aagcggacag atcgagtgga gcaagatcca gacccctacg gatgaggtgg tggtgcccta 300

cgatacc 307

<210> 1460
<211> 259
<212> nucleic acid
<213> Zea mays

<400> 1460

cccacgcgtc cgcctcctcg cttgcactcc gctcgtctga catctcgtcc cgtcctttcg 60

tttcgacgcc tcgcgagccc cgacgatggc caccaccgcg gtgtcggtcg acgagaagct 120

cgataagctt cgcgccgagg tcgccaagct cgaccagatc agcgagaacg agaagtccgg 180

gttcatcagc ctcgtgtcac ggtacctcag tggggaggcg gacagatcga gtggagcaaa 240

tccagaccct acggatgag 259

<210> 1461
<211> 314
<212> nucleic acid
<213> Zea mays

<400> 1461

accacaccac acctcctcgc ttgcactccg ctcgtctgac atctcgtccc gtcctttcgt 60

ttcgaagcct cgcgagcccc gacgatggcc accaccgcgg tgtcggtcga cgagaagctc 120

gataagcttc gcgccgaggt cgccaagctc gaccagatca gcgagaacga gaagtccggg 180

ttcatcagcc tcgtgtcacg gtacctcagt ggggaggcgg acagatcgag tggagcaaga 240

tccagacccc tacggatgag gtggtggtgc cctacgatac cgtcgcgtcg cctcccgaag 300

atctcgagga gacg 314

<210> 1462
<211> 238
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (193)
<223>

<400> 1462

gttcgtctga catctcctcc cgtcctttcc tttctgaggc tcgcgaaccc cgacaatggc 60

cgcaaccgcg gtgtcggtcg acgagaagct cgacaagctt cgcgccgagg tcgccaaact 120

cagccagatc agcgagaacg agaaggccgg gttcatcagc ctcgtgtcac gctacctcag 180

tggggaggcg ganagatcga gtggagcaag atccagaccc cgaccgatga ggtagtgg 238

<210> 1463
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1463

acacaccaca ccacacctcc tcgcttgcac tccgctcgtc tgacatctcg tcccgtcctt 60

tcgtttcgaa gcctcgcgag caccgacgat ggccaccacc gcggtgtcgg tcgacgagaa 120

gctcgataag cttcgcgccg aggtcgccaa gctcgaccag atcagcgaga acgacaactc 180

cgggttcatc agcctcgtgt cacggtacct cagtggggag gcggacagat cgagtggagc 240

aagatccaga cccctaagga tgaggtggtg gtgccctacg ataccgtcg 289

<210> 1464
<211> 299
<212> nucleic acid

<213> Zea mays

<400> 1464

gcagtctaac agcacccccct cctcgctcgc actccgttcg tctgaactct cctcccgtcc 60

tttcctttct gaggctcgcg aaccccgaca atggccgcaa ccgcggtgtc ggtcgacgag 120

aagctcgaca agcttcgcgc cgaggtcgcc aaactcagcc agatcagcga gaacgagaag 180

gccgggttca tcagcctcgt gtcacgctac ctcagtgggg aggcggacag atcgagtgga 240

gcaagatcca gaccccgacc gatgaggtag tggtgccgta cgataccctc acgtcgcct 299

<210> 1465
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1465

gcaccccctc ctcgctcgca ctccgctcgt ctgacatctc ctcccgtcct ttcctttctg 60

aggctcgcga accccgacga tggccgccac cgcggtgtcg gtcgacgaga agctcgacaa 120

gcttcgcgcc gaggtcgcca aactcaacca gatcagcgag aacgagaagt ccgggttcat 180

cagcctcgtg tcacgttacc tcagtgggga ggcggacaga tcgagtggag caagatccag 240

accccgaccg atgaggt 257

<210> 1466
<211> 188
<212> nucleic acid
<213> Zea mays

<400> 1466

ggaagttgat ggtgtgaaag tccttcaact cgaaaccgca gctggtgcag ctattcggtt 60

cttcgacaaa gcgattggaa ttaatgttcc ccgctcaagg tttctcccag tgaaggctac 120

atctgatctg ttgcttgtgc agtctgatct ttacaccttg gttgatggct ttgtcatccg 180

caacccat 188

<210> 1467
<211> 289
<212> nucleic acid
<213> Zea mays

<400> 1467

cggcacacac accacaccac acctcctcgc ttccactccg ctcgtctgac atctcgtccc 60

gtcctttcgt ttcgaagcct cgcgagcccc gacgatggcc accgccgcgg tgtcggtcga 120

cgagaagctc gacaagcttc gcgccgaggt cgccaagctc gaccagatca gcgagaacga 180

gaagtccggg ttcatcagcc tcgtgtcacg ctacctcagt ggggaagcgg acagatcgag 240

tggagcaaga tccagacccc tacggatgag gtggtggtgc ctacgatac 289

<210> 1468
<211> 275
<212> nucleic acid
<213> Zea mays

<400> 1468

acacggcaca cacaccacac cacacctcct cgcttccact ccgctcgtct gacatctcgt 60

cccgtccttt cctttcgaag cctcgcgagc cccgacgatg gccaccgccg cggtgtcggt 120

cgacgagaag ctcgacaagc ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa 180

cgagacgtcc gggttcatca gcctcgtgtc ccgctacctc agtggggaag cggacagatc 240

gagtggagca agatccagac ccctacggat gaggt 275

<210> 1469
<211> 315
<212> nucleic acid
<213> Zea mays

<400> 1469

accacaccac acctcctcgc ttgcacaccg ctcgtctgac atctcgtccc gtcctttcgt 60

ttcgaagcct cgcgagcacc gacgatagcc accaccgcgg tgtcggtcga cgagaagctc 120

gataagcttc gcgccgaggt cgccaagctc gaccagatca gcgagaacga gaagaccggg 180

ttcatcagcc tcgtgtcacg gtacctcagt acggaggcgg agcagatcga gtagagcaag 240

atccagactc ctacggatga ggtggtggta ccctacgata cagtcgcgtc gcctcccgaa 300

gatctcgagg agacg 315

<210> 1470
<211> 250
<212> nucleic acid

<213> Zea mays

<400> 1470

aggcacacac accacaccac acctcctcgc ttccacaccg ctcgtctgac atctcgtccc 60

gtcctttcgt ttcgaagcct cgcgagcccc gacgatggcc accgccgcgg tgtcggtcga 120

cgagaagctc gacaagcttc gcgccgaggt cgccaagctc gaccagatca gcgagaacga 180

gaagtccggg ttcatcagcc tcgtgtcacg ctacctcagt ggggaagcgg acagatcgag 240

tggagaagat 250

<210> 1471
<211> 255
<212> nucleic acid
<213> Zea mays

<400> 1471

cacacacacc acaccacacc tcctcgcttc cactccgctc gtctgacatc tcgtcccgtc 60

ctttcgtttc gaagcctcgc gagccccgac gatggccacc gccgcggtgt cggtcgacga 120

gaagctcgac aagcttcgcg ccgaggtcgc caagctcgac cagatcagcg agaacgagaa 180

gtccgggttc atcagcctcg tgtcacgcta cctcagtggg gaagcggaca gatcgagtgg 240

agcaagatcc agacc 255

<210> 1472
<211> 276
<212> nucleic acid
<213> Zea mays

<400> 1472

atacggcaca cacaccacac cacacctcct cgcttccact ccgctcgtct gacatctcgt 60

cccgtccttt cgtttcgaag cctcgcgagc cccgacgatg gccaccgccg cggtgtcggt 120

cgacgagaag ctcgacaagc ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa 180

cgagaagtcc gggttcatca gcctcgtgtc acgctacctc agtggggaag cggacagatc 240

gagtggagca agatccagac cctacggat gaggtg 276

<210> 1473
<211> 256
<212> nucleic acid

<213> Zea mays

<400> 1473

ctccccctcc tcgctcgcac tccgctcgtc tgacatctcc tcccgtcctt tcctttctga 60

ggctcgcgaa ccccgacgat ggccgccacc gcggtgtcgg tcgacgagaa gctcgacaag 120

cttcgcgccg aggtcgccaa actcaaccag atcagcgaga acgagaagtc cgggttcatc 180

agcctcgtgt cacgttacct cagtggggag acggagcaga tcgagtgaga ccagatccag 240

accccgacgg ataagg 256

<210> 1474
<211> 258
<212> nucleic acid
<213> Zea mays

<400> 1474

cggacgcgtg gcggacgcgt gggcggacgc gtgggcggac gcgtgggcag cggaaaactt 60

gacatcttat aggctcaggg caatgagtat gtctttgttg caaactcaga caacttgggt 120

gctatagtcg acatcaagat cctaaaccat ctgatcaata accagaacga gtactgcatg 180

gaggttactc caaagacgct ggctgacgtt aagggtggca ctctcatctc ttacgaagga 240

agagttcagc ttttggag 258

<210> 1475
<211> 292
<212> nucleic acid
<213> Zea mays

<400> 1475

cacacacacc acaccacacc tcctcgcttc cactccgctc gtctgacatc tcgtcgcgtc 60

ctttcgtttc gaagcctcgc gagccccgac gatggccacc gccgcggtgt cggtcgacga 120

gaagctcgac aagctcgcgc cgaggtcgcc aagctcgacc agagtagcga gaacgagaag 180

tccgggttca tcagcctcgt gtcacgctac ctcagtgggg aagcggacag atcgagtgga 240

gcaagatcca gaccctacgg atgaggtggt ggtgcctacg ataccgtcgc gt 292

<210> 1476
<211> 308
<212> nucleic acid

<213> Zea mays

<400> 1476

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cgttctggtg atgtatggat tggctctgga attacactca agggcaaggt gacaattatc 120

gccaagcctg gagtgaagtt ggagattcca gatggagacg tacttgagaa caaggatgtc 180

aatggccctg aggatcttta agcaatgttt gtcatcacca gtttttccca aggacatgtc 240

acaggaactg ccaagcctag tcactcctac tgagctctat attttgtaat tttcatgtgc 300

attccgat 308

<210> 1477
<211> 189
<212> nucleic acid
<213> Zea mays

<400> 1477

agcttgaagg tttctggtga tgtctggttt ggttctggaa ttacgctcaa gggcaaggtg 60

acaatcaccg ccaagtctgg agtgaagttg gagattccag acggagctgt atttgaaaac 120

aaggatgtca atggccctga ggatctttaa gctatgcttg ccgtcaccag tttttcccaa 180

ggacatgtc 189

<210> 1478
<211> 158
<212> nucleic acid
<213> Zea mays

<400> 1478

tgaagtttaa gatattcaac actaacaact tgtgggtgaa ccttaaagct gtcaagagac 60

tagtagaggc tgaggcactt aagatggaaa ttattccaaa ccccaaggaa gttgatggtg 120

tgaaagtccg tcaacttgaa actgcagctg gtgcagct 158

<210> 1479
<211> 245
<212> nucleic acid
<213> Zea mays

<400> 1479

cccacgcgtc cgcccacgcg tccgacacac cacaccacac ctcctcgctt ccactccgct 60

cgtctgacat ctcgtcccgt cctttcgttt cgaagcctcg cgagccccga cgatggccac 120

cgccgcggtg tcggtcgacg agaagctcga caagcttcgc gccgaggtcg ccaagctcga 180

ccagatcagc gagaacgaga agtccgggtt catcagcctc gtgtcacgct acctcagtgg 240

ggaag 245

<210> 1480
<211> 271
<212> nucleic acid
<213> Zea mays

<400> 1480

agcttgaagg tttctggtga tgtctggttt ggttctggaa ttacgctcaa gggcaaggtg 60

acaatcaccg ccaagtctgg agtgaagttg gagattccag acggaactgt atttgaaaac 120

aaggatgtca atggccctga ggatctttaa gctatgcttg ccgtcaccag tttttcccaa 180

ggacatgtca ataggagctg ccaacccaaa tcactcccgc tgagctctac cttttgtaat 240

tctcgtgccg ttccgcttcc gctgtgaggg t 271

<210> 1481
<211> 247
<212> nucleic acid
<213> Zea mays

<400> 1481

cgcttgaagg tttctggtga tgtctggttt ggttctggaa ttacgctcaa gggcaaggtg 60

acaatcaccg ccaagtctgg agtgaagttg gagattccag acggagctgt atttgaaaac 120

aaggatgtca atggccctga ggatctttaa gctatgcttg ccgtcaccag tttttcccaa 180

ggacatgtca ataggagctg ccaacccaaa tcactcccgc tgagctctac cttttgtaat 240

tctcgtg 247

<210> 1482
<211> 225
<212> nucleic acid
<213> Zea mays

<400> 1482

acacaccaca ccacacctcc tcgcttccac tccgctcgtc tgacatctcg tcccgtcctt 60

tcgtttcgaa gcctcgcgag ccccgacgat ggccaccgcc gcggtgtcgg tcgacgagaa 120

gctcgacaag cttcgcgccg aggtcgccaa gctcgaccag atcagcgaga acgagaagtc 180

cgggttcatc agcctcgtgt cacgctacct cagtggggaa gcgga 225

<210> 1483
<211> 256
<212> nucleic acid
<213> Zea mays

<400> 1483

cggcacacac accacaccac acctcctcgc ttccactccg ctcgtctgac atctcgtccc 60

gtcctttcct ttcgaagcct cgcgagcccc gacgatggcc accgccgcgg tgtcggtcga 120

cgagaagctc gacaagcacc cgccgaggtc gccaagctcg accagatcag cgagaacgag 180

aagtccgggt tcatcagcct cgtgtcacgc tacctcagtg gggaagcgga cagatcgagt 240

ggagcaagat ccgacc 256

<210> 1484
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 1484

gcgggcagtc taacagcacc ccctcctcgc tcgcactccg ttcgtctgac atctcctccc 60

gtcctttcct ttctgaggct cgcgaacccc gacaatggcc gcaaccgcgg tgtcggtcga 120

cgagaagctc gacaagcttc gcgccgaggt cgccaaactc agccagatca gcgagaacga 180

gaaggccggg ttcatcagcc tcgtgtcacg ctacctcagt gggggagcgg gacagat 237

<210> 1485
<211> 223
<212> nucleic acid
<213> Zea mays

<400> 1485

cacctcctcg cttgcactcc gctcgtctga catctcgtcc cgtcctttcg tttcgaagcc 60

tcgcgagccc cgacgatggc caccaccgcg gtgtcggtcg acgagaagct cgataagctt 120

cgcgccgagg tcgccaagct cgaccagatc agcgagaacg agaagtccgg gttcatcagc 180

ctcgtgtcac ggtacctcag tggggaggcg gacagatcga gtg 223

<210> 1486
<211> 141
<212> nucleic acid
<213> Zea mays

<400> 1486

agctgaggca cttaagatgg aaattattcc aaacccaagg aagttgatgg tgtgaaagtc 60

cttcaacttg aaactgcagc tggtgcagct attcgtttct ttgacaaagc gattggaatt 120

aatgttcccc gctcaagatt t 141

<210> 1487
<211> 257
<212> nucleic acid
<213> Zea mays

<400> 1487

cggcacacac accacaccac acctcctcgc ttccactccg ctcgtctgac atctcgtccc 60

gtcctttcgt ttcgaagcct cgcgagcccc gacgatggcc accgccgcgg tgtcggtcga 120

cgagaagctc gacaagcttc gcgccgaggt cgccaagctc gaccagatca gcgagaacga 180

gaagtccggg ttcatcagcc tcgtgtcacg ctacctcagt ggggaagcgg acagatcgag 240

tggagcaaga tccagac 257

<210> 1488
<211> 143
<212> nucleic acid
<213> Zea mays

<400> 1488

tggtgatgtc tggtttggct ctggaattac actcaagggc aaggtgacaa ttatcgccaa 60

gcctggagtg aagttggaga ttccagatgg agacgtactt gagaacaagg atgtcaatgg 120

ccctgaggat ctttaagcaa tgt 143

<210> 1489
<211> 200
<212> nucleic acid

<213>	Zea mays

<400>	1489

ccacaccaca cctcctcgct tccactccgc tcgtctgaca tctcgtcccg tcctttcgtt 60

tcgaagcctc gcgagccccg acgatggcca ccgccgcggt gtcggtcgac gagaagctcg 120

acaagcttcg cgccgaggtc gccaagctcg accagatcag cgagaacgag aagtccgggt 180

tcatcagcct cgtgtcacgc 200

<210>	1490
<211>	272
<212>	nucleic acid
<213>	Zea mays

<400>	1490

agacggcaca cacaccacac cacacctcct cgcttccact ccgctcgtct gatctctcgt 60

cccgtccttt cgtttcgaag cctcgcgagc cccgacgatg gccaccgccg cggtgtcgat 120

cgacgagaag ctcgacaagc ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa 180

cgagaagtcc gggttcatca gcctcgtgtc acgctacctc agtggggaag cggacagatc 240

gagtggagca agatccagac ccctacggat ga 272

<210>	1491
<211>	149
<212>	nucleic acid
<213>	Zea mays

<400>	1491

ctttgttgca aactcagaca acttgggtgc tatagtcgac aacaagatcc taaaccatct 60

gatcaataac cagaacgagt attgcatgga ggttactcca aagacgctgg ctgacgttaa 120

gggtggcact ctcatctctt acgaaggaa 149

<210>	1492
<211>	189
<212>	nucleic acid
<213>	Zea mays

<400>	1492

atcgcgtcct ttcctttctg aggctcgcga accccgacaa tggccgcaac cgcggtgtcg 60

gtcgacgaga agctcgacaa gcttcgcgcc gaggtcgcca aactcagcca gatcagcgag 120

aacgagaagg ccgggttcat cagcctcgtg tcacgctacc tcagtgggga ggcggacaga 180

tcgagtgga 189

<210> 1493
<211> 295
<212> nucleic acid
<213> Zea mays

<400> 1493

caccacacca cacctcctcg cttgcactcc gctcgtctga catctcgtcc cgtcctttcg 60

tttcgaagcc tcgcgagccc cgacgattgc caccaccgcg gtgtcggtcg acgagaagct 120

cgatgagctt cgcgccgagg tcgccaagct cgaccagatc agcgagaacg agaagtccgg 180

gttcatcagc ctcgtgtcac ggtacctcag tggggaggcg gacagatcga gtggagcaag 240

atccagaccc ctacggatga ggtggtggtg cgctacgata ccgtcgcgtc gcctc 295

<210> 1494
<211> 253
<212> nucleic acid
<213> Zea mays

<400> 1494

ctggtttggc tctggaatta cactcaaggg caaggtgaca attatcgcca agcctggagt 60

gaagttggag attccagatg gagacgtact tgagaacaag gatgtcaatg gccctgagga 120

tctttaagca atgtttatca tcaccagttt tcccaaggac atgtcacagg aactgccaag 180

cctaatcact cctactgagc tctatatttt gtaattttca tgtgcattcc gattccgctg 240

tgagggtcat gtg 253

<210> 1495
<211> 286
<212> nucleic acid
<213> Zea mays

<400> 1495

acgccccgac cacggtccgc gacgctgggc gaccgtggcg gcagacggca cacacaccac 60

accacacctc ctcgcttcca ctcacgctcg tctaccatct cgtcccgtcc tttcgtttcg 120

aagcctcgcg agccccgacg atggccaccg ccgcggtgtc ggtcgacgag aagctcgaca 180

agcttcgcgc cgaggtcgcc aagctcgacc agatcagcga gaacgagaag tccgggttca 240

tcagcctcgt gtcacgctac ctcagtgggg aagcggacag atcgag 286

<210> 1496
<211> 116
<212> nucleic acid
<213> Zea mays

<400> 1496

gtggtgccct acgataccgt cgcgtcgcct cccgaagatc tcgaggagac gaagaagctg 60

ctggataagc tcgttgtgct caagcttaac ggagggctcc ggaacgacca tgggct 116

<210> 1497
<211> 237
<212> nucleic acid
<213> Zea mays

<400> 1497

cggcagacgg cacacacacc acaccacacc tcctcgcttc cactccgctc gtctgacatc 60

tcgtcccgtc ctttcgtttc gaagcctcgc gagccccgac gatggccacc gccgcggtgt 120

cggtcgacga gaagctcgac aagcttcgcg ccgaggtcgc caagctcgac cagatcagcg 180

agaacgagaa gtccgggttc atcagcctcg tgtcacgata tctcagtgga aacgcgg 237

<210> 1498
<211> 150
<212> nucleic acid
<213> Zea mays

<400> 1498

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cgataagctt cgcgccgagg tcgccaagct cgaccagatc agcgagaacg agaatttcgg 120

gttcatcagc ctcgtgtcac ggtacctcag 150

<210> 1499
<211> 116
<212> nucleic acid
<213> Zea mays

<400> 1499

ctggtttggc tctggaatta cactcaatgg gcaagtgaca attatcgcca agcctggagt 60

gaagttggag attccagatg gagacgtact tgagaacaag gatgtcaatg gccctg 116

<210> 1500
<211> 99
<212> nucleic acid
<213> Zea mays

<400> 1500

ggaccgtggc gagaagctcg ataagcttcg cgccgaggtc gccaagctcg accagatcag 60

cgagaacgag aagtccgggt tcatcagcct cgtgtcacg 99

<210> 1501
<211> 283
<212> nucleic acid
<213> Zea mays

<400> 1501

gcgggacggg cggacggtgg gcggaccgtg gcggacggtg ggtggccctg aggatcttta 60

agcaatgagc tgttctcaag tacgtctcca tctggaatcg ccaagcctgg agtgaagttg 120

gagattccag atggagacgt acttgagaac aaggatgtca atggccctga ggatctttaa 180

gcaatgtttg tcatcaccag tttttcccaa ggacatgtca caggaactgc caagcctagt 240

cactcctact gagatctata ttttgtaatt ttcatgtgca ttc 283

<210> 1502
<211> 343
<212> nucleic acid
<213> Zea mays

<400> 1502

gttcaagaag gttgggagct tccttggtcg cttcaagtcg atacctagca ttgttgagct 60

tgacagcttg aaggtttccg gtgatgtttg gttcggttct ggaattgtac tgaaggggaa 120

agtgaccatc actgcaaaac ctggcgtcaa gctagaaatc ccagacggag cagtgattgg 180

gaataaggat atcagtggcc ctgaggacct ttagataaga atcagcgaat cagcaaggag 240

gctcacttcg ccaagtggcg gatcattttt cgtgtttttt ttcctgtata ttcaaacagg 300

ttccatgata ttatggagaa tattaattgc cagtataatc cag 343

<210> 1503
<211> 338
<212> nucleic acid
<213> Zea mays

<400> 1503

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gggtgatgtt tggttcggtt ctggaattgc actgaatggg aaagcgtcca tcactgcaaa 120

acctgtcgtc aagctataaa ttcaatacgg atcactgatt ggtgaataat gatctcagtc 180

gccttgagga cctttagata agaataagcg tatcaccacg tacgcttact tacccaagtg 240

acggatcatc gctcgtggac tctcctgaat atccagacaa gtccgatgat actacggacc 300

atatcaactg ccagcatatt gcaatcattg tacatgta 338

<210> 1504
<211> 320
<212> nucleic acid
<213> Zea mays

<400> 1504

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ttggttgatg gcttcgttac acgtaattca gccagaacaa atctatcaaa tccctcaatt 120

gaacttggtc ctgagttcaa gaaggttggg agcttccttg gtcgcttcaa gtcgatacct 180

agcattgttg agcttgacag cttgaaggtt tccggtgatg tttggttcgg ttctggaatt 240

gtactgaagg ggaaagtgac catcactgca aaacctggcg tcaagctaga aatcccagac 300

ggagcagtga ttgggaataa 320

<210> 1505
<211> 425
<212> nucleic acid
<213> Zea mays

<400> 1505

aaatcgagtc cctgaacaag aagtatggat gtaatgtccc tttacttctg atgaactctt 60

tcaataccca tgatgacaca cagaagatcg ttgagaagta ttccaactcc aacattgaaa 120

ttcatacttt caatcagagc cagtatcctc gcattgttac cgaggacttc ttgccacttc 180

caagcaaagg gaaatctggg aaggatggct ggtatcctcc aggccatggt gatgtgttcc 240

cctctttgaa taacagtgga aaactcgaca tcttattggc tcaaggcaag gagtatggtc 300

ttcgtgctaa ctcagacaac ttgggtgcta tagtcgacat caagatcctg aaccatctga 360

tcaataacca gaatgaatac tgcatggagg ttactccaaa aacattggct gatgttaaag 420

gcggt 425

<210> 1506
<211> 414
<212> nucleic acid
<213> Zea mays

<400> 1506

gggtgaacct taaagctatc aagagactcg tagaggctga ggcacttaag atggaaatta 60

ttccaaaccc caaggaagtt gatggtgtga aagtccttca actcgaaacc gcagctggtg 120

cagctattcg gttcttcgac aaagcgattg gaattaatgt tccccgctca aggtttctcc 180

cagtgaaggc tacatctgat ctgttgcttg tgcagtctga tctttacacc ttggttgatg 240

gctttgtcat ccgcaaccca tccagagcga atccagctaa cccttcaatt gagcttggac 300

ctgagttcaa gaaggttgcc aatttccttg ctcggttcaa gtccatcccc agcatagttg 360

agcttgacag cttgaaggtt tctggtgatg tctggtttgg ctctggaatt acac 414

<210> 1507
<211> 441
<212> nucleic acid
<213> Zea mays

<400> 1507

cccacgcgtc cggaggcact taagatggaa attattccaa accccaagga agttgatggg 60

gtgaaagtcc ttcaacttga aactgcagct ggtgcagcta ttcgtttctt tgacaaagcg 120

attggaatta atgttccccg ctcaagattt ctcccggtga aggctacatc tgatttattg 180

cttgtgcagt ctgatcttta caccttggtt gatggctttg tcatccgcaa tccatccaga 240

gcgaatccag ctaacccttc gattgagctt ggacctgagt tcaagaaggt tgccaatttc 300

cttgctcggt tcaagtccat ccccagcatc gtcgagcttg acagcttgaa ggtttctggt 360

gatgtctggt ttggttctgg aattacgctc aagggcaagg tgacaatcac cgccaagtct 420

ggagtgaagt tggaggttcc a 441

<210> 1508
<211> 406
<212> nucleic acid
<213> Zea mays

<400> 1508

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gtgaatgaat ttaaatcaat cgagaagttt aagatattca acactaacaa cttgtgggtg 120

aaccttaaag ctatcaagag actcgtagag gctgaggcac ttaagatgga aattattcca 180

aaccccaagg aagttgatgg tgtgaaagtc cttcaactcg aaaccgcagc tggtgcagct 240

attcggttct tcgacaaagc gattggaatt aatgttcccc gctcaaggtt tctcccagtg 300

aaggctacat ctgatctgtt gcttgtgcag tctgatcttt acaccttggt tgatggcttt 360

gtcatccgca acccatccag agcgaatcca gctaaccctt caattg 406

<210> 1509
<211> 412
<212> nucleic acid
<213> Zea mays

<400> 1509

ctgacgttaa gggtggcact ctcatctctt acgaaggaag agttcagctg ttggagagtg 60

cccaagtacc cgatgagcat gtgaatgaat ttaaatcaat cgagaagttt aagatattca 120

acactaacaa cttgtgggtg aaccttaaag ctatcaagag actcgtagag gctgaggcac 180

ttaagatgga aattattcca aaccccaagg aagttgatgg tgtgaaagtc cttcaactcg 240

aaaccgcagc tggtgcagct attcggttct tcgacaaagc gattggaatt aatgttcccc 300

gctcaaggtt tctcccagtg aaggctacat ctgatctgtt gcttgtgcag tctgatcttt 360

acaccttggt tgatggcttt gtcatccgca acccatccag agcgaatcca gc 412

<210> 1510
<211> 436
<212> nucleic acid
<213> Zea mays

<400> 1510

cccactcgtc cgcccacgcg tccggggagg cggatcagat cgagtggagc aggatccaga 60

cccctactga tgaggtggtg gtgccctact ataccgtcgc gtcgcctccc gaagatctcg 120

aggagactaa gaagctgctg gataagctcg ttgtgctcaa gcttaactga gggctcggga 180

cgaccatggg ctgcactggg cccaagtctg tcattgaagt ccgcaatggg ttcacattcc 240

ttgaccttat tgtgattcaa attgagtccc tgaacaagaa gtatggatgc aatgtccctt 300

tacttctgat gaactctttc aacacccatg atgacacaca gaagattgtt gagaagtatt 360

ccaactccaa catcgaaatt catactttca atcatagcca gtatcctctc attgttaccg 420

aggacttttt gccact 436

<210> 1511
<211> 407
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (309)
<223>

<400> 1511

accaagcgtc cggcctcgtg tcacgctacc tcagtgggga agcggagcag atcgagtgga 60

gcaagatcca gacccctacg gatgaggtgg tggtgcccta cgataccgtc gcgtcgcctc 120

ccgaagatct cgaggagacg aagaagctgc tggataagct cgttgtgctc aagcttaacg 180

gagggctcgg gacgaccatg ggctgcactg ggcccaagtc tgtcattgaa gtccgcaatg 240

ggttcacatt ccttgacctt attgtgattc aaattgagtc cctgaacaag aagtatggat 300

gcaatgtcnc tttacttctg atgaactctt tcaacaccca tgatgacaca cagaagattg 360

ttgagaagta ttccaactcc aacatcgaaa ttcatacttt caatcag 407

<210> 1512
<211> 440
<212> nucleic acid
<213> Zea mays

<400> 1512

ggctggtatc ctccaggcca tggtgatgtg ttcccctctt tgaataacag tggaaaactc 60

gacatcttat tggctcaggg caaggagtat gtcttcgttg ctaactcaga caacttgggt 120

gctatagtcg acatcaagat cctgaaccat ctgatcaata accagaatga atactgcatg 180

gaggttactc caaaaacatt ggctgatgtt aaaggcggta ctctcatctc ttacgaagga 240

agagttcagc ttttggagat tgcccaagta cctgatgagc atgtgaatga gtttaaatca 300

atcgagaagt ttaagatatt caacactaac aacttgtggg tgaaccttaa agctgtcaag 360

agactagtag aggctgaggc acttaagatg gaaattattt caaaccccaa ggaagttgat 420

ggtgtgaaag tccttcaact 440

<210> 1513
<211> 445
<212> nucleic acid
<213> Zea mays

<400> 1513

gaagtattcc aactccaaca tcgaaattca tactttcaat cagagccagt agcctctcgg 60

tgttaccgag gacttcttgc cacttcccag caaagggaaa tctgggaagg atggctggta 120

tcctcctggt catggtgatg tgtttccctc tttgaataac agcggaaaac ttgacatctt 180

attggctcag ggcaaggagt atgtctttgt tgcaaactca gacaacttgg gtgctatagt 240

cgacatcaag atcctaaacc atctgatcaa taaccagaac gagtactgca tggaggttac 300

tccaaagacg ctggctgacg ttaagggtgg cactctcatc tcttacgaag gaagagttca 360

gcttttggag attgcccaag tatccgatga gcatgtgaat gaatttaaat caatcgagaa 420

gtttaagata ttcaacacta acaac 445

<210> 1514
<211> 477
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (457)
<223>

<400> 1514

attcggttct tcgacaaagc gattggaatt aatgttcccc gctcaaggtt tctcccagtg 60

gaggctacat ctgatctgtt gcttgtgcag tctgatcttt acaccttggt tgatggcttt 120

gtcatccgca acccatccag agcgaatcca gctaaccctt caattgagct tggacctgag 180

ttcaagaagg ttgccaattt ccttggtcgg ttcaagtcca tccccagcat agttgagctt 240

gacagcttga aggtttctgg tgatgtctgg tttggctctg gaattacact caagggcaag 300

gtgacaatta tcgccaagcc tggagtgaag ttggagattc cagatggaga cgtacttgag 360

aacaaggatg tcaatggccc tgaggatctt taagcaatgt ttatcatcac cagttttccc 420

aaggacatgt cacaggaact gccaagccta atcactncta ctgagctcta tattttg 477

<210> 1515
<211> 450
<212> nucleic acid
<213> Zea mays

<400> 1515

ggaaattatt ccaaacccca aggaagttgt tggtgtgaaa gtccttcaac ttgaaactgc 60

agctggtgca gctattcgtt tctttgacaa agcgattgga attaatgttc cccgctcaag 120

atttctcccg gtgaaggcta catctgattt attgcttgtg cagtctgatc tttacacctt 180

ggttgatggc tttgtcatcc gcaatccatc cagagcgaat ccagctaacc cttcgattga 240

gcttggacct gagttcaaga aggttgccaa tttccttgct cggttcaagt ccatccccag 300

catcgtcgag cttgacagct tgaaggtttc tggtgatgtc tggtttggtt ctggaattac 360

gctcaagggc aaggtgacaa tcaccgccaa gtctggagtg aagttggagg ttccagatgg 420

agcttgattt gaaaacaagg atgtcaatgg 450

<210> 1516
<211> 438
<212> nucleic acid
<213> Zea mays

<400> 1516

cacacctcct cgcttccact ccgctcgtct gacatctcgt cccgtccttt cgtttcgaag 60

cctcgcgagc cccgacgatg gccaccgccg cggtgtcggt cgacgagaag ctcgacaagc 120

ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa cgagaagtcc gggttcatca 180

gcctcgtgtc acgctacctc agtggggaag cggagcagat cgagtggagc aagatccaga 240

cccctacgga tgaggtggtg gtgccctacg ataccgtcgc gtcgcctccc gaagatctcg 300

aggagacgaa gaagctgctg gataagctcg ttgtgctcaa gcttaacgga gggctcggga 360

cgaccatggg ctgcactggg cccaagtctg tcattgaagt ccgcaatggg ttcacattcc 420

ttgaccttat tgtgattc 438

<210> 1517
<211> 464
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (442)
<223>

<400> 1517

gttccccgct caaggtttct cccagtgaag gctacatctg atctgttgct tgtgcagtct 60

gatctttaca ccttggttga tggctttgtc atccgcaacc catccagagc gaatccagct 120

aacccttcaa ttgagcttgg acctgagttc aagaaggttg ccaatttcct tggtcggttc 180

aagtccatcc ccagcatagt tgagcttgac agcttgaagg tttctggtga tgtctggttt 240

ggctctggaa ttacactcaa gggcaaggtg acaattatcg ccaagcctgg agtgaagttg 300

gagattccag atggagacgt acttgagaac aaggatgtca atggccctga ggatctttaa 360

gcaatgttta tcatcaccag ttttcccaag gacatgtcac aggaactgcc aagcctaatc 420

actcctactg agctctatat tntgtaattt tcatgtgcat tccg 464

<210> 1518
<211> 421
<212> nucleic acid
<213> Zea mays

<400> 1518

acccacgcgt ccgctgacat ctcgtcccgt cctttcgttt cgaagcctcg cgagccccga 60

cgatggccac cgccgcggtg tcggtcgacg agaagctcga caagcttcgc gccgaggtcg 120

ccaagctcga ccagatcagc gagaacgaga agtccgggtt catcagcctc gtgtcacgct 180

acctcagtgg ggaagcggag cagatcgagt ggagcaagat ccagacccct acggatgagg 240

tggtggtgcc ctacgatacc gtcgcgtcgc ctcccgaaga tctcgaggag acgaagaagc 300

tgctggataa gctcgttgtg ctcaagctta acggagggct cgggacgacc atgggctgca 360

ctgggcccaa gtctgtcatt gaagtccgca atgggttcac attccttgac cttattgtga 420

t 421

<210> 1519
<211> 443
<212> nucleic acid
<213> Zea mays

<400> 1519

cccacgcgtc cgccacacca cacctcctcg cttccactcc gctcgtctga catctcgtcc 60

ggtcctttcg tttcgaagcc tcgcgagccc cgacgatggc caccgccgcg gtgtcggtcg 120

acgagaagct cgacaagctt cgcgccgagg tcgccaagct cgaccagatc agcgagaacg 180

agaagtccgg gttcatcagc ctcgtgtcac gctacctcag tggggaagcg gagcagatcg 240

agtggagcaa gatccagacc cctacggatg aggtggtggt gccctacgat accgtcgcgt 300

cgcctcccga agatctcgag gagacgaaga agctgctgga taagctcgtt gtgctcaagc 360

ttaacggagg gctcgggacg accatggtct gcactgggcc caagtctgtc attgaagtcc 420

gcaatgggtt cacattcctt gac 443

<210> 1520
<211> 319
<212> nucleic acid
<213> Zea mays

<400> 1520

atccttccgg taaacctcgc catctaattg gctcatggca tggagtatgt cttcgttgct 60

aactcggaca gcttggttgc tatagtcgac atcaagatcc tgaaccatct gatcaataac 120

cagaatgaat actgcatgga ggttactcca aaaacattgg ctgatgttaa aggcggtact 180

ctcatctctt acgaaggaag agttcagctt ttggagattg cccaagtacc tgatgagcat 240

gtgaatgagt ttaaatcaat cgagaagttt aagatattca acactaacaa cttgtgggtg 300

aacctttaag ctgtcaaga 319

<210> 1521
<211> 394

<212> nucleic acid
<213> Zea mays

<400> 1521

cccacgcgtc cgcccacgcg tccgcccacg cgtccgcgga cgcgtgggtt tcaatcagag 60

ccagtatcct cgcattgtta ccgaggactt cttgccactt cccagcaaag ggaaatctgg 120

gaaggatggc tggtatcctc ctggtcatgg tgatgtgttt ccctctttga ataacagcgg 180

aaaacttgac atcttattgg ctcagggcaa agagtatgtc tttgttgcaa actcagacaa 240

cttgggtgct atagtcgaca tcaagatcct aaaccatctg atcaataacc agaacgagta 300

ctgcatggag gttactccaa agacgctggc tgacgttaag ggtggcactc tcatctctta 360

cgaaggaaga gttcagcttt tggagattgc ccaa 394

<210> 1522
<211> 400
<212> nucleic acid
<213> Zea mays

<400> 1522

cccacgcgtc cggcccaagt acctgatgag catgtgaatg agtttaaatc aatcgagaag 60

tttaagatat tcaacactaa caacttgtgg gtgaacctta aagctgtcaa gagactagta 120

gaggctgagg cacttaagat ggaaattatt ccaaacccca aggaagttga tggtgtgaaa 180

gtccttcaac ttgaaactgc agctggtgca gctattcgtt tctttgacaa agcgattgga 240

attaatgttc cccgctcaag atttctcccg gtgaaggcta catctgattt attgcttgtg 300

cagtctgatc tttacacctt ggttgatggc tttgtcatcc gcaatccatc cagagcgaat 360

ccagctaacc cttcgattga gcttggacct gagttcaaga 400

<210> 1523
<211> 419
<212> nucleic acid
<213> Zea mays

<400> 1523

cacctcctcg cttgcactcc gctcgtctga catctcgtcc cgtcctttcg tttcgaaggg 60

tcgggagccc cgacgatggc caccaccgcg gtgtcggtcg acgagaagct cgataagctt 120

cgcgccgagg tcgccaagct cgaccagatc agcgagaacg agaagtccgg gttcatcagc 180

ctcgtgtcac ggtacctcag tggggaggcg gagcagatcg agtggagcaa gatccagacc 240

cctacggatg aagtggtggt gccctacgat accgtcgcgt cgcctcccga agatctcgag 300

gagacgaaga agctgctgga taagctcgtt gtgctcaagc ttaacggagg gctcgggacg 360

accatgggct gcactgggcc caagtctgtc attgaagtcc gcaatgggtt cacattcct 419

<210> 1524
<211> 408
<212> nucleic acid
<213> Zea mays

<400> 1524

tgttacgcgt tcaaggcatc tcccagcgaa ggctacatct gatctgctgc ttgtgcaggc 60

tgatctttac accgtggttg atggctttgt catccgcaac ccatgcagag cgaatccagc 120

taacccttca attgagcttg gacctgagtt caagaaggtt gccaatttac ttggtcggtt 180

caagtccatc cccagcatag ttgagcttga cagcttgaag gtttctggtg atgtctggtt 240

tggctctgga attacactca agggcaaggt gacaattatc gccaagcctg tagtgaagtt 300

ggagattcca gatggagacg tacttgagaa caaggatgtc aatggtcctg aggatctata 360

agcaatggtt atcatcacca ggttttccaa ggacatgtta cagggact 408

<210> 1525
<211> 358
<212> nucleic acid
<213> Zea mays

<400> 1525

ctcgcattgt taccgaggac ttcttgccac ttcccagcaa agggaaatct gggaaggatg 60

gctggtatcc tcctggtcat ggtgatgtgt ttccttcttt gaataacagc ggaaaacttg 120

acatcttatt ggctcagggc aaggagtatg tctttgttgc aaactcagac aacttgggtg 180

ctatagtcga catcaagatc ctaaaccatc tgatcaataa ccagaacgag tactgcatgg 240

aggttactcc aaagacgctg gctgacgtta agggtggcac tctcatctct tacgaaggaa 300

gagttcagct tttggagatt gcccaaagtc cccgatgaag catgtgaatg gaattaaa 358

<210> 1526
<211> 349

<212> nucleic acid
<213> Zea mays

<400> 1526

ccgtcctttc ctttctgagg ctcgcgaacc ccgacaatgg ccgcaaccgc ggtgtctgtc 60

gacgagaagc tcgacaagct tcgcgccgag gtcgccaaac tcagccagat cagcgagaac 120

gagaaggccg ggttcatcag cctcgtgtca cgctacctca gtggggaggc ggagcagatc 180

gagtggagca agatccagac cccgaccgat gaggtagtgg tgccgtacga taccctcacg 240

tcgcctcctg aagatctcga ggagacgaag aagctgctgg acaagctcgt tgtgctcaag 300

ctcaacggag ggctcgggac gaccatgggc tgcaccggac ccaagtctg 349

<210> 1527
<211> 439
<212> nucleic acid
<213> Zea mays

<220>
<221> unsure
<222> (415)
<223>

<400> 1527

cccacgcgtc cgatgatctg gtgctcgtgc aggctgatct ttacaccttg gatgatggct 60

ttgtcatccg caacccatcc agagcgaatc cagctaaccc ttcaattgag cttggacctg 120

agttcaagaa ggttgccaat ttccttggtc ggttcaagtc catccccagc atagttgagc 180

ttgacagctt gaaggtttct ggtgatgtct ggtttggctc tggaattaca ctcaagggca 240

aggtgacaat tatcgtcaag cctggagtga agttggagat tccagatgga gacgtacttg 300

agaacaagga tgtcaatggc cctgaggatc tttaagcaat gtgtatcatc accagttgtc 360

ccaaggacat gtcacatgaa ctgtcaagcc taatcactcc tactgagctc tatantttgt 420

aatgttcatg tgcattccg 439

<210> 1528
<211> 373
<212> nucleic acid
<213> Zea mays

<400> 1528

aattaatgtt ccccgctcaa gatttctccc ggtgaaggct acatctgatt tattgcttgt 60

gcagtctgat ctttacacct tggttgatgg ctttgtcatc cgcaatccat ccagagcgaa 120

tccagctaac ccttcgattg agcttggacc tgagttcaag aaggttgcca atttccttgc 180

tcggttcaag tccatcccca gcatcgtcga gcttgacagc ttgaaggttt ctggtgatgt 240

ctggtttggt tctggaatta cgctcaaggg caaggtgaca atcaccgtca agtctggagt 300

gaagttggag gttccagatg gagctgtatt tgaaaacaag gatgtcaatg gccctgagga 360

tccttaagct atg 373

<210> 1529
<211> 392
<212> nucleic acid
<213> Zea mays

<400> 1529

caaattcata ctttcaatca gagccagtat cctcgcattg ttaccgagga cttcttgcca 60

cttcccagca aagggaaatc tgggaaggat ggctggtatc ctcctggtca tggtgatgtg 120

tttccctctt tgaataacag cggaaaactt gacatcttat tggctcaggg caaagagtat 180

gtctttgttg caaactcaga caacttgggt gctatagtcg acatcaagat cctaaaccat 240

ctgatcaata accagaacga gtactgcatg gaagttactc caaagacgct ggctgacgtt 300

aaaggtggca ctctcatctc ttacgaaagg aagagttcag ctttttggag attgcccaag 360

tacccgatga gcatgtgaat gaatttaaat ca 392

<210> 1530
<211> 407
<212> nucleic acid
<213> Zea mays

<400> 1530

cacaccacac cacacctgct cgcttccact ccgctcgtct gacatctcgt cccgtcgttg 60

cgtttcgaag cctcgcgagc cccgacgatg gccaccgccg cggtgtcggt cgacgagaag 120

ctcgacaagc ttcgcgccga ggtcgccaag ctcgaccaga tcagcgagaa cgagaagtcc 180

gggttcatca gcctcgtgtc acgctacctc agtggggaag cggagcagat cgagtggagc 240

aagatccaga cccctacgga tgaggtggtg gtgccctacg ataccgtcgc gtagcctccc 300

gaagatctcg aggagacgaa gaagctgctg gataagctcg ttgtgctcaa gcttaacgga 360

gggctcggga cgaccatggg ctgcactggg cccaagtatg tcattga 407

<210> 1531
<211> 407
<212> nucleic acid
<213> Zea mays

<400> 1531

agcttttgga gattgcccaa gtacccgatg agcatgtatg ttgctgtttc tgtgtggctt 60

aagtttcata atctgttcca tgatttcacc accagccttt tgtagtaaga gctacacaac 120

cttttctaat tttcttgtat ctctatccag gtgaatgaat ttaaatcaat cgagaagttt 180

aagatattca acactaacaa cttgtgggtg aaccttaaag ctatcaagag actcgtagag 240

gctgaggcac ttaagatgga aattattcca aaccccaagg aagttgatgg tgtgaaagtc 300

cttcaactcg aaaccgcagc tggtgcagct attcggttct tcgacaaagc gattggaatt 360

aatgttcccc gctcaaagtt tctcccagtg aaggctacat ctgatct 407

<210> 1532
<211> 460
<212> nucleic acid
<213> Zea mays

<400> 1532

gtagctgcag tgcggtcgta gatcacgggt ccacgcacgc gtccgaatgg cattgtcatc 60

cgcaacccat ccagagcgaa tccagctaac ccttcaattg agcttggacc tgagttcaag 120

aaggttgcca atttccttgc tcggttcaag tccatcccca gcatagttga gcttgacagc 180

ttgaaggttt ctggtgatgt ctggtttggc tctggaatta cactcaaggg caatgtgaca 240

attatcgcca agcctggagt gaagttggag attccagatg gagacgtact tgagaacaag 300

gatgtcaatg ggcctgagga tctttaagca atgtctgtca tcaccagttt ttcccaagga 360

catgtcacag gaactgccga gcctaatcac tcctactgag ctctatattt ttgtaatttt 420

catgtgcatt ccgattccgc tgcgagggtc atgtgagccc 460

<210> 1533
<211> 257
<212> nucleic acid

<213> Zea mays

<400> 1533

gtttaagata ttcaacacta acaacttgtg ggtgaacctt aaagctatca agagactcgt 60

agaggctgag gcacttaaga tggaaattat tccaaacccc aaggaagttg atggtgtgaa 120

agtccttcaa ctcgaaaccg cagctggtgc agctattcgg ttcttcgaca aagcgattgg 180

aattaatgtt ccccgctcaa ggtttctccc aatgaaggct acatctgatc tgatgcttgt 240

gcagtctgat ctttaca 257

<210> 1534
<211> 378
<212> nucleic acid
<213> Zea mays

<400> 1534

aacccacgcg tccgcccacg cgtccgcaca cacaccacac cacacctcct cgcttccact 60

ccgctcgtct gacatctcgt cccgtccttt cgtttcgaag cctcgcgagc cccgacgatg 120

gccaccgccg cggtgtcggt cgacgagaag ctcgacaagc ttcgcgccga ggtcgccaag 180

ctcgaccaga tcaggcgagt gcccccctcc tctccgcact agatctcgcc gcccgatcgc 240

ttcgcctccc atttttgctg atttctgagt gtgtttttcc gcgcagcgag aacgagaagt 300

ccgggttcat cagcctcgtg tcacgctacc tcagtgggga agcggagcag atcgagtgga 360

gcaagatcca gaccccta 378

<210> 1535
<211> 60
<212> nucleic acid
<213> Zea mays

<400> 1535

aatggaatta aaggtccccg gttaagaatt cttcccgtga atgcttcctt cgaattaatg 60

<210> 1536
<211> 342
<212> nucleic acid
<213> Zea mays

<400> 1536

aagaattaca ctcaagggca aggtgacaat tatcgccaag cctggagtga agttggagat 60

tccagatgga gacgtacttg agaacaagga tgtcaatggc cctgaggatc tttaagcaat 120

gtttgtcatc accagttttt cccaaggaca tgtcacagga actgccaagc ctagtcactc 180

ctactgagct ctatattttg taattttcat gtgcattccg attccgctgt gagggtcatg 240

ttaaccccgc tagaaaataa ttgtaatctt ctttgctgcg tctgtacttc tgtttttggt 300

cgccaggacg tatattttta ctgaaatgat actccgaaga gc 342

<210> 1537
<211> 443
<212> nucleic acid
<213> Zea mays

<400> 1537
aggtgacaat tatcgccaag cctggagtga agttggagat tccagatgga 60

gacgtacttg agaacaagga tgtcaatggc cctgaggatc tttaagcaat gtttatcatc 120

accagttttc ccaaggacat gtcacaggaa ctgccaagcc taatcactcc tactgagctc 180

tatattttgt aattttcatg tgcattccga ttccgctgtg agggtcatgt gagcccgcta 240

gagaataatt gtaatcttct ttgctgcgtc tgtacttctg tttttgtgcg ccaggacgta 300

tatttttact gaaatgatac tccgtaatat attataatac ttgttttata ttatttttat 360

tgtttttatt atattattat gtttttttta tgtttttata atttattttt tttttatatt 420

atttttttat aattttttta ttt 443

<210> 1538
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 1538

ggccgcacag cccgatgttg atggattttt ggttggtggt gccaattctt tgcagtttcc 60

tccatttaca gaacctccat agataattct tacagatgca gcaactgcaa agaattggcc 120

gcacagcccg atgttgatga tttttggttg gtggtgcctc cctgaagccg gagttcgtgg 180

acatcataaa tgctgccact gtgaagaaga attgaaattc gtagttagg 229

<210> 1539
<211> 267

<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (3)...(4),(6),(14),(24),(53),(65)...(66),(73),(75),(98),
(108),(113),(120),(125),(142),(150),(152),(174),(179),
(183),(189),(210),(224)...(226),(230),(232),(235),(248),
(252),(255)
<223> unsure at all n locations

<400> 1539

ggnntngagg ttgnacaagg gtanctctgt ctgcttctac aatttctctc gtnaccaata 60

gaaanncaaa acnanaacat gggcagaaaa ttcttcgncg gtggcaantg ganattgaan 120

ggganc aatg aggaggtaaa gnagattgtn antactttga atgaggctaa agtngctgna 180

gangatgtng tagaagttgt tgtgagaccn ccttatgtgt tccnnncatn gnaanaagtt 240

tgctgcanct gnttnccatg tttcggc 267

<210> 1540
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1540

tgggaccaaa gactccatca gaaagcttgt ctctgacttg aacagtgcaa cattggagtc 60

tgatgttgat gttgttgttg cacctccttt tgtgtacatc gatcaggtga aaaactcaat 120

tacagatagg attgaaattt ctgcccagaa ttcttgggtg ggaaaaggtg gggctttcac 180

gggagaaatc agtgtggagc aactaaaaga ccttggctgc aagtgggtta ttcttggaca 240

ttctgagcga agacatgtaa ttgga 265

<210> 1541
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1541

ggcaactgga agtgtaacgc aacaaaagac tcaatcagca agcttgttgc tgacttgaac 60

aatgcaaaat tggagcctga tgttgatgtt gtcgttgcac ctcccttcct ctacatcgat 120

caagtgaaaa actcactcac tgagcggctt gacatatctg cccagaattc ttgggttgga 180

aaaggtggtg cttttactgg agaaatcagc gcggaacaac taaacgatct tggatgcacg 240

tgggttgttc ttggacatt 259

<210> 1542
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 1542

gcaacctcaa catccctctt ctcctcaaat ctccattctc tcaactcaca gcctttctct 60

tcctcactct ccttcttccg aaatgtccat tccaccctct ctttcccttc ttctaaaccc 120

tcccgtggcg ttgtagccat ggctggctct ggcaagttct ttgttggtgg caattggaag 180

tgtaatggga ccaaagactc catcagaaag cttgtctctg acttgaacag tgcaacattg 240

gagtc 245

<210> 1543
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 1543

agatgcacca ctctttcttc ttcaatcaat ggcagcaacc tcaacatccc tcttctcctc 60

aaatctccat tctctcaact cacaaccttt ctcttcctca ctctccttct tctgaaatgt 120

ccattccacc ctctctttcc cttcttctaa accctcccgt ggcgttgtag ccatggctgg 180

ctctggcaag ttctttgttg gtggcaattg gaagtgtaat gggaccaaag actccatcag 240

aaagcttgtc tctgacttga acagtgcaac attggagtct gat 283

<210> 1544
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1544

ctcgagccgc ttcaatcaat ggcagcaacc tcaacatccc tcttctcctc atatctccat 60

tctctcaact cataaccttt ctcttcatca ctctccttcc gaaatgtcca ttccactctc 120

tctttccctt cttctaaacc ctctcgtggc gttgtagcca tggctggctc tggcaagttc 180

tttgatggtg gcaattggaa gtgtaatggt accaaagact ccatcagaca gcttgtctct 240

gttttgaac 249

<210> 1545
<211> 278
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (124),(129),(148)...(149),(152),(157),(204)
<223> unsure at all n locations

<400> 1545

cattcctagg taccatttgc accactcttt cttcttcaat caatggcagc aacctcaaca 60

tccctcttct cctacaaatc tccattctct caactcacaa cctttctctt cctcactctc 120

cttnagccng tccattccac cctctctnnc anaacantct aaaccctccc gtggcgttgt 180

agccatggct ggctctggca agtnctttgt tggtggcaat tggaagtgta atgggaccaa 240

agactccatc agaaagttgt ctctggattg aacaggca 278

<210> 1546
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1546

attcaatcca agcttagatt gttttactgt tacaccattc ctaggtacca tttgcaccac 60

tctttcttct tcaatcaatg gcagcaacct caacatccct cttctcctca aatctccatt 120

ctctcaactc acaacctttc tcatcctcac tctccttctt ccgaaatgtc cattccaccc 180

tctctttccc ttcttataaa ccctcccgtg gcgttgtagc catggctggc tctggcaagt 240

tctttgttgg tggcaattgg aagtgtaa 268

<210> 1547
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 1547

aaatttctgc ccagaattct tgggtgggaa aaggtggggc tttcacggga gaaatcagtg 60

tggagcaact aaaagacctt ggctgcaagt gggttattct tggacattct gagcgaagac 120

atgtaattgg agaaaatgat gagtttatag gaaagaaaac tgcctatgct ttgagtgagg 180

gtcttggtgt gatagcatgt attggggaac ttctacaaga aagagaagct ggtcaaactt 240

tcgacatttg tttccagcaa ttgaaggctt ttgcagatgc agtgccaag 289

<210> 1548
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1548

gaaatttctg cccagaattc ttgggtggga aaaggtgggg ctttcacggg agaaatcagt 60

gtggagcaac taaaagacct tggctgcaag tgggttattc ttggacattc tgagcgaaga 120

catgtaattg gagaaaatga tgagtttata gggaagaagg ctgtctatgc tttgagtgag 180

ggtctaggtg tgatagcatg tattggggaa ctgttacaag aaagagaagc tgggaaaact 240

ttcgatgttt gttttcagca attgaaggct 270

<210> 1549
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 1549

gtgaaaaact cactcactga gcggattgaa aatctgccca gaattcttgg gttggaaaag 60

gtggtgctct tactggagaa atcagcgcgg aacaactaaa agatcttgga tgcaagtggg 120

ttgttcttgg acattctgag cgaagacatg ttattggaga aaatgatgag tttataggga 180

cgaaagctgc ctatgctttg agccaaggtc ttggggtgat tgcatgcatt ggagaattgt 240

tagaagaaag ggaggctgga aaaacttttg atgtttgttt t 281

<210> 1550
<211> 223
<212> nucleic acid
<213> Glycine max

<400> 1550

acggctgcga gaagacgaca gaagggtgga aaaggtggtg cttttactgg agaaatcagc 60

gcggaacaac taaaagatct tggatgcaag tgggttgttc ttggacattc tgagcgaaga 120

catgttattg gagaaaatga tgagtttata gggaagaaag ctgcctatgc tttgagccaa 180

ggtcttgggg tgattgcatg cattggagaa ttgttagaag aca 223

<210> 1551
<211> 170
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (105),(125),(145)
<223> unsure at all n locations

<400> 1551

cactgagcgg attgaaatat ctgcccagaa ttcttgggtt ggaaaaggtg gtgcttttac 60

tggagaaatc agcgcggaac aactaaaaga tcttggatgc aagtnggttg ttcttggaca 120

ttctnagcga agacatgtta ttggngaaaa tgatgagttt atagggaaga 170

<210> 1552
<211> 355
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (278)
<223>

<400> 1552

gtttcggcac aaaactgttg ggttcgcaaa ggtggtgctt ataccggtga ggttagtgct 60

gtcatgcttg ttaatttggg aattccttgg gttattattg gtcactctga acggaggcag 120

cttttaaatg aatcaaacga gtttgtggga gataaagttg cctatgcact tcaacaaggt 180

ctaaaagtta ttgcatgcat tggggagact ctcgaacagc gtgaagctgg tacaacaacg 240

gctgttgttt ctgagcaaac aaaagcaatt gcagctanaa tatcaaattg ggacaatgtt 300

gtcttggcct acgagccagt ttggggcatt ggaacaggaa aggttgctac tcctg 355

<210> 1553

<211>	275
<212>	nucleic acid
<213>	Glycine max

<220>
<221>	unsure
<222>	(30)
<223>

<400>	1553

gagcaaacaa aagcaattgc agctaaaatn tcaaattggg acaatgtcgt tttggcctat 60

gagccagttt gggccattgg aacaggaaag gttgcaactc ctgctcaggc tcaagaggtt 120

catgctgatt taaggaaatg ggttcatgac aatgtgagtg ctgaagttgc tgcatctgta 180

agaattatct atggaggctc tgtaaatgga ggaaactgca aagaattggc agcacagccc 240

gatgttgatg gatttttggt tggtggtgca tccct 275

<210>	1554
<211>	268
<212>	nucleic acid
<213>	Glycine max

<400>	1554

gtgggagata aagttgccta tgcacttcaa caaggtctaa aagttattgc atgcattggg 60

gagactctcg aacagcgtga agctggtaca acaacggctg ttgtttctga gcaaacaaaa 120

gcaattgcag ctaaaatatc aaattgggac aatgtcgttt tggcctacga gccagtttgg 180

gccattggaa caggaaaggt tgctactcct gctcaggctc aagaggtcca tgctgatttg 240

aggaaatggg ttcatgacaa tgtgagtg 268

<210>	1555
<211>	264
<212>	nucleic acid
<213>	Glycine max

<400>	1555

gtgggagata aagttgccta tgcacttcaa caaggtctga aagttatagc atgcattggg 60

gaaactcttg aacagcgtga agctggtaca acaacggctg ttgttgctga gcaaacaaaa 120

gcaattgcag ctaaaatatc aaattgggac aatgtcgttt tggcctatga gccagtttgg 180

gccattggaa caggaaaggt tgcaactcct gctcaggctc aagaggttca tgctgattta 240

aggaaatggg ttcatgacaa tgtg 264

<210> 1556
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1556

catgcattgg ggacactctt gaacagcgtg aagctggtac aacaacggct gttgttgctg 60

agcaaacaaa agcaattgca gctaaaatat caaattggga caatgtcgtt ttggcctatg 120

agccagtttg ggccattgga acaggaaagg ttgcaactcc tgctcaggct caagaggttc 180

atgctgattt aaggaaatgg gttcatgaca atgtgagtgc tgaaattgct gcatctgtaa 240

gaattatcta tggagg 256

<210> 1557
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1557

gtccctggag aagatgttgt agaagttgtt gtgagccctc cttttgtgtt ccttcctttt 60

gtaaaaagtt tgctgcgccc tgatttccat gtctcggccc aaaattgttg ggttcgcaaa 120

ggtggtgctt atactggagt cgttagtgct gaaatgcttg ttaatttggg aattccttgg 180

gttattattg gtcactctga acggaggcag cttttgaatg aatcaaatga gtttgtggga 240

gataaagttg cctatgcact tcaacaaggt 270

<210> 1558
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1558

cggagataaa gttgcctatg cacttcaaca aggtctaaca gttattgcat gcattgggga 60

gactctcgaa cagcgtgaag ctggtacaac aacggctgtt gtttctgagc aaacaaaagc 120

aattgcagct aaaatatcaa attgggacaa tgttgttttg gcctacgagc cagtttgggc 180

cattggcaca ggaaaggttg ctactcctgc tcaggctcaa gaggtccatg ctgatctgag 240

gaaatgggtt catgacaatg tgag 264

<210> 1559
<211> 258
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (128),(147),(238),(248)
<223> unsure at all n locations

<400> 1559

gcattgggga gactctcgaa cagcgtgaag ctggtacaac aacggctgtt gtttctgagc 60

aaacaaaagc aattgcagct aaaatatcaa attgggacaa tgtcgttttg gcctacgagc 120

cagtttgngc cattggaaca ggaaagnttg ctactcctgc tcaggctcaa gaggtccatg 180

cggatttgag gaaatgggtt catgacaatg tgagtgctga agttgctgca tcggtaanat 240

ttatctangg aggtctgt 258

<210> 1560
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1560

tgcttatact ggagaggtta gtgctgaaat gcttgttaat ttgggaattc cttgggttat 60

tattggtcac tctgaacgga ggcagctttt gaatgaatca aatgagtttg tgggagataa 120

agttgcctat gcacttcaac aaggtctgaa agttatagca tgcattgggg aaactcttga 180

acagcgtgaa gctggtacaa caacggctgt tgttgctgag caaacaaaag caattgcagc 240

taaaatatca aattgggaca atgtcgtttt ggcctatg 278

<210> 1561
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1561

ctcgtttcaa tcgaaaccaa aacaaaaaca tggcagaaa attcttcgtc ggtggcaact 60

ggaaatgcaa tgggaccact gaggaggtaa agaagattgt tactactttg aatgaggcta 120

aagtccctgg agaagatgtc gtagaagttg ttgtgagccc tccttttgtg ttccttcctg 180

ttgtaaaaag tttgctgcgc cctgatttcc atgtttcggc acaaaactgt tgggttcgca 240

aaggtggtgc ttataccggt gaggttagtg ctgaaatg 278

<210> 1562
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1562

aaaacaaaaa catgggcaga aaattcttcg tcggtggcaa ctggaaatgc aatgggacca 60

ctgaggaggt aaagaagatt gttactactt tgaatgaggc taaagtccct ggagaagatg 120

tcgtagaagt tgttgtgagc cctccttttg tgttccttcc tgttgtaaaa agtttgctgc 180

gccctgattt ccatgtttcg gcaaaactgt tgggttcgca aaggtggtgc ttataccggt 240

gaggttagtg ctgaaatgct tgttaatttg gg 272

<210> 1563
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1563

tacggctgcg agaagacgac agaaggggaa gttgttgtga gccctccttt tgtgttcctt 60

cctgttgtaa aaagtttgct gcgccctgat ttccatgttt cggcacaaaa ctgttgggtt 120

cgcaaaggtg gtgcttatac cggtgaggtt agtgctgaaa tgcttgttaa tttgggaatt 180

ccttgggtta ttattggtca ctctgaacgg aggcagcttt taaatgaatc aaacgagttt 240

gtgggagata aagttgccta tgca 264

<210> 1564
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 1564

ctcgagccgg ttgcaactcc tgctcaggct caagaggttc atgctgattt aaggaaatgg 60

actcatgaca atgtgagtgc tgaagttgct gcatctgtaa gaattatcta tggaggctct 120

gtaaatggag gaaactgcaa agaattggca gcacagcccg atgttgatgg atttttggtt 180

ggtgtggcat ccctcaaggc ggaatttgtg gacatcataa acgctgctac tgtgaagaag 240

aattgaaatt cgtagtt 257

<210> 1565
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 1565

cttcactttc tctcgtttca atcgaaaaaa atcatgggca gaaaattctt cgtcggtggc 60

aactggaaat gcaatgggac cactgaggag gtgaagaaga ttgttactac tttaaatgaa 120

gctaaagtcc ctggagaaga tgttgtagaa gttgttgtga gccctccttt tgtgttcctt 180

ccttttgtaa aaagtttgct gcgccctgat ttccatgtct cggcccaaaa ttgttgggtt 240

cgcaaaggtg gtgcttatac tggagatgtt agtgctgaaa tgc 283

<210> 1566
<211> 256
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (73),(206),(243),(245)
<223> unsure at all n locations

<400> 1566

aaaaaatcat gggcagaaaa ttcttcgtcg gtggtcaact ggaaatgcaa tgggaccact 60

gaggaggtga agnagattgt tactacttta aatgaagcta aagtccctgg agaagatgtt 120

gtagaagttg ttgtgagccc tccttttgtg ttccttcctt ttgtaaaaag tttgctgcgc 180

cctgatttcc atgtctcggc ccaaanttgt tgggttcgca aaggtggtgc ttatactgga 240

gangntagtg ctgaaa 256

<210> 1567
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1567

gtaaaaaatc atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac 60

tgaggaggtg aagaagattg ttactacttt aaatgaagct aaagtccctg gagaagatgt 120

tgtagaagtt gttgtgagcc ctccttttgt gttccttcct tttgtaaaaa gtttgctgcg 180

ccctgatttc catgtctcgg cccaaaattg ttgggttcgc aaaggtggtg cttatactgg 240

agaggttagt gctgaaatgc tt 262

<210> 1568
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1568

gtctgcttct tcactttctc tcgtttcaat cgaaaaaaat catgggcaga aaattcttcg 60

tcggtggcaa ctggaaatgc aatgggacca ctgaggaggt gaagaagatt gttactactt 120

taaatgaagc taaagtccct ggagaagatg ttgtagaagt tgttgtgagc cctccttctg 180

tgttccttcc ttttgtaaaa agtttgctgc gccctgattt ccatgtctcg gcccaaaatt 240

gttgggttcg caaaggtggt gcttat 266

<210> 1569
<211> 281
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (37),(144),(221)
<223> unsure at all n locations

<400> 1569

gtagaagttg ttgtgagccc tccttttgtg ttccttnctt ttgtaaaaag tttgctgcgc 60

cctgatttcc atgtctcggc ccaaaattgt tgggttcgca aaggtggtgc ttatactgga 120

gaggttagtg ctgaaatgct tgtnaatttg ggaattcctg ggttattatt ggtcactctg 180

aacggaggca gcttttgaat gaatcaaatg agtttgtggg nccataaagt tgcctatgca 240

cttcaacaag gtctgaaatt atagcatgca ttgggccaac c 281

<210> 1570
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 1570

atcttcactt tctctcgttt caatcgaaac caaaacaaaa acatgggcag aaaattcttc 60

gtcggtggca actggaaatg caatgggacc actgaggagg taaagaagat tgttactact 120

ttgaatgagg ctaaagtccc tggagaagat gtcgtagaag ttgttgtgag ccctcctttt 180

gtgttccttc ctgttgtaaa aagtttgctg cgccctgatt tccatgtttc ggcacaaaac 240

tgttgggttc gcaaaggtgg tgcttatacc ggtgaggtta gtgc 284

<210> 1571
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1571

gcttcttcac tttctctcgt ttcaatcgaa accaaaacaa aaacatgggc agaaaattct 60

tcgtcggtgg caactggaaa tgcaatggga ccactgagga ggtaaagaag attgttacta 120

ctttgaatga ggctaaagtc cctggagaag atgtcgtaga agttgttgtg agccctcctt 180

ttgtgttcct tcctgttgta aaaagtttgc tgcgccctga tttccatgtt tcggcacaaa 240

actgttgggt tcgcaaaggt gg 262

<210> 1572
<211> 274
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (182)
<223>

<400> 1572

ctctttctct gtctgcttct tcactttctc tcgtttcaat cgaaaaaaat catgggcaga 60

aaattcttcg tcggtggcaa ctggaaatgc aatgggacca ctgaggaggt gaagaagatt 120

gttactactt taaatgaagc taaagtccct ggagaagatg ttgtagaagt tgttgtgagc 180

cntccttttg tgttccttcc ttttgtaaaa agtttgctgc gccctgattt ccatgtctcg 240

gcccaaaatt gttgggttcg caaagtggtg ctta 274

<210> 1573
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1573

cactttctct cgtttcaatc gaaaaaaatc atgggcagaa aattcttcgt cggtggcaac 60

tggaaatgca atgggaccac tgaggaggtg aagaagattg ttactacttt aaatgaagta 120

aagtccctgg agaagatgtt gtagaagttg ttgtgagccc tccttttgtg ttccttcctt 180

ttgtaaaaag tttgctgcgc cctgatttcc atgtctcggc ccaaaattgt tgggttcgca 240

aaggtggtgc tta 253

<210> 1574
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 1574

aagggtttct cttctctttc tctgtctgct tcttcacttt ctctcgtttc aatcgaaaaa 60

aatcatgggc agaaaattct tcgtcggtgg caactggaaa tgcaattggg acactgagga 120

ggtgaagaag attgttacta ctttaaatga agctaaagtc cctggagaag atgttgtaga 180

agttgttgtg agccctcctt ttgtgttcct tccttttgta aaacgtttgc tgcgccctga 240

tttccatgtc tcggcccaaa attgttgggt tcgcaaaggt ggtg 284

<210> 1575
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1575

gcttcttcac tttctctcgt ttcaatcgaa agcaaaacaa aaacatgggc agaaaattct 60

tcgtcggtgg caactggaaa tgcaatggga ccactgagga ggtaaagaag attgttacta 120

ctttgaatga ggctaaagtc cctggagaag atgtcgtaga agttgttgtg agccctcctt 180

ttgtgttcct tcctgttgta aaaagtttgc tggcgccctg atttccatgt ttcggcacaa 240

aactgttggg ttcgcaaagg tggtgcttat accggtga 278

<210> 1576
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 1576

aagggtttct ctttctcttt ctctgtctgc ttcttcactt tctctcgttt caatcgaaaa 60

aaatcatggg cagaaaattc ttcgtcggtg gcaactggaa atgcaatggg accactgagg 120

aggtgaagaa gattgttact actttaaatg aagctaaagt ccctggagaa gatgttgtag 180

aagttgttgt gagccctcct tttgtgttcc ttccttttgt aaaaagtttg ctgcgccctg 240

atttccatgt ctcggcccaa aattgttggg t 271

<210> 1577
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1577

gtttctctgt ctgcttcttc actttctctc gtttcaatcg aaaccaaaac aaaaacatgg 60

gcagaaaatt cttcgtcggt ggcaactgga aatgcaatgg gaccactgag gaggtaaaga 120

agattgttac tactttgaat gaggctaaag tccctggaga agatgtcgta gaagttgttg 180

tgagccctcc ttttgtgttc cttcctgttg taaaaagttt gctgcgccct gatttccatg 240

tttcggcaca aaactgttgg gtt 263

<210> 1578
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1578

ctcgagccgg ttgaacaagg gtttctctgt ctgcttcttc actttctctc gtttcaatac 60

gcaaccaaaa caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg 120

ggaccactga ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag 180

aagatgtcgt agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt 240

tgctgcgccc tgatttccat gtttcggcac aaaactgttg ggtcg 285

<210> 1579
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1579

aagggtttct ctgtctgctt cttcactttc tctcgtttca atcgaaacca aaacaaaaac 60

atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac tgaggaggta 120

aagaagattg ttactacttt gaatgaggct aaagtccctg gagaagatgt cgtagaagtt 180

gttgtgagcc ctccttttgt gttccttcct gttgtaaaaa gtttgctgcg ccctgatttc 240

catgtttcgg cacaaaactg ttgggttcg 269

<210> 1580
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1580

gcactttctc tcgtttcaat cgaaaccaaa ctccaaacgt gggcagaaaa ttcttcgtcg 60

gtggcaactg gaaatgccct gggaccactg aggaggtaaa gaagattgtt actactttga 120

atgaggctaa agtccctgga gaagatgtcg tagaagttgt tgtgagccct ccttttgtgt 180

tccttcctgt tgtaaaaagt ttgctgcgcc ctgatttcca tgtttcggca caaaactgtt 240

gggttcgcaa agg 253

<210> 1581
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1581

gtttcaatcg aaaaaaatca tgggcagaaa attcttcgtc ggtggcaact ggaaatgcaa 60

tgggaccact gaggaggtga agaagattgt tactacttta aatgaagcta aagtccctgg 120

agaagatgtt gtagaagttg ttgtgagccc tccttttgtg ttccttcctt ttgtaaaaag 180

tttgctgcgc cctgatttcc atgtctcggc ccaaaatgtt gggttcgcaa aggtggtgct 240

tatactggag agt 253

<210> 1582
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 1582

ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa caaaaacatg 60

ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga ggaggtaaag 120

aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt agaagttgtt 180

gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc tgatttccat 240

gtttcggcac aaaactg 257

<210> 1583
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1583

ctttctctcg tttcaatcga aaccaaaaca aaatcatggg cagaaaattc ttcgttggtg 60

gcaactggaa atgcaatggg accactgagg aggtaaagaa gattgttact actttgaatg 120

aggctaaagt ccctggagaa gatgtcgtag aagttgttgt gagccctcct tttgtgttcc 180

ttcctgttgt aaaaagtttg ctgcgccctg atttccatgt ttcggcacaa aactgttg 238

<210> 1584
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1584

ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa caaaaacatg 60

ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga ggaggtaaag 120

aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt agaagttgtt 180

gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc tgatttccat 240

gtttcggcac aaaact 256

<210> 1585
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1585

tcgctgtctg cttcttcact ttctctcgtt tcaatcgaga ccagaacaaa aacatgggca 60

gaaaattctt cgtcggtggc aactggaaat gcaatgggat cactgaggag gtaaagaaga 120

ttgttactac tttgaatgag gctaaagtcc ctggagaaga tgtcgtagaa gttgttgtga 180

gccctccttt tgtgttcctt cctgttgtaa aaagtttgct gcgccctgat ttccatgttt 240

cggcacgaaa ctgtt 255

<210> 1586
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1586

tctgtctgct tcttcacttt ctctcgtttc aatcgaaacc aaaacaaaaa catgggcaga 60

aaattcttcg tcggtggcaa ctggaaatgc aatgggacca ctgaggaggt aaagaagatt 120

gttactactt tgaatgaggc taaagtccct ggagaatgtc gtagaagttg ttgtgagccc 180

tccttttgtg ttccttcctg ttgtaaaaag tttgctgcgc cctgatttcc atgtttcggc 240

acaaaactgt tgggttcgc 259

<210> 1587
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 1587

tgcttcttca ctttctctcg tttcaatcga gaaaaatcat gggcagaaga ttcttcgtcg 60

gtggcaactg gaaatgcaat gggaccactg aggaggtgaa gaagattgtg actactttaa 120

atgaagctaa agtccctgga gagatgttgt agaagttgtt gtgagccctc cttttgtgtt 180

ccttcctttt gtaaaaagtg tgctgcgccc tgatttccat gtctcggccc aaaattgttg 240

ggttcgcaaa 250

<210> 1588
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1588

attgttgaac aagggtttct ctgtctgctt cttcactttc tctcgtttca atcgaaacca 60

aaacaaaaac atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac 120

tgaggaggta aagaagattg ttactacttt gaatgaggct aaagtccctg gagaagatgt 180

cgtagaagtt gttgtgagcc ctccttttgt gttccttcct gttgtaaaaa gtttgctgcg 240

ccctgatttc catgtttcgg cacaa 265

<210> 1589
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1589

gtttctcttt ctctttctct gtctgcttct tcactttctc tcgtttcaat cgaaaaaaat 60

catgggcaga aaattcttcg tcggtggcaa ctggaaatgc aatgggacca ctgaggaggt 120

gaagaagatt gttatacttt aaatgaagct aaagtccctg gagaagatgt tgtagaagtt 180

gttgtgagcc ctccttttgt gttccttcct tttgtaaaaa gtttgctgcg ccctgatttc 240

catgtctcgg cccaaaattg ttgggtt 267

<210> 1590
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 1590

agggtttctc tttctctttc tctgtctgct tcttcacttt ctctcgtttc aatcgaaaaa 60

aatcatgggc agaaaattct tcgtcggtgg caactggaaa tgcaatggga ccactgagga 120

ggtgaagaag attgttacta ctttaaatga agctaaagtc cctggagaag atgttgtaga 180

agttgttgtg agccctcctt ttgtgttcct tccttttgta aaaagtttgc tgcgccctga 240

tttccatgtc 250

<210> 1591
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1591

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccataa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgctc 240

tgatttccat g 251

<210> 1592
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 1592

cttctctgtc tgcttcttca ctttctctcg tttcaatcga aaccaaaaca aaaacatggg 60

cagaaaattc ttcgtcggtg gcaactggaa atgcaatggg accactgagg aggtaaagaa 120

gattgttact actttgaatg aggctaaagt ccctggagaa gatgtcgtag aagttgttgt 180

gagccctcct tttgtgttcc ttcctgttgt aaaaagtttg ctgcgccctg atttccatgt 240

ttcgg 245

<210> 1593
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1593

gggtttctct ttctctttct ctgtctgctt cttcactttc tctcgtttca atcgaaaaaa 60

atcatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac cactgaggag 120

gtgaagaaga ttgttactac tttaaatgaa gctaaagtcc ctggagaaga tgttgtagaa 180

gttgttgtga gccctccttt tgtgttcctt ccttttgtaa aaagtttgct gcgccctgat 240

ttccatgtct cgg 253

<210> 1594
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1594

tgttgaacaa gggtttctct gtctgcttct tcactttctc tcgtttcaat cgaaaccaaa 60

acaaaatcat gggcagaaaa ttcttcgttg gtggcaactg gaaatgcaat gggaccactg 120

aggaggtaaa gaagattgtt actactttga atgaggctaa agtacctgga gaagatgtcg 180

tagaagttgt tgtgagccct ccttttgtgt tccttcctgt tgtaaaaagt ttgctgcgcc 240

ctgatttcca tgtttcggca ca 262

<210> 1595
<211> 253
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (80),(161),(249)...(250)
<223> unsure at all n locations

<400> 1595

agggtttctc tgtctgcttc ttcactttct ctcgtttcaa tcgaaaccaa aacaaaaaca 60

tgggcagaaa attcttcgtn ggtggcaact ggaaatgcaa tgggaccact gaggaggtaa 120

agaagattgt tactactttg aatgaggcta aagtccctgg ngaagatgtc gtagaagttg 180

ttgtgagccc tccttttgtg ttccttcctg ttgtaaaaag tttgctgcgc cctgatttcc 240

atgtttcgnn cac 253

<210> 1596
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1596

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc 240

tgatttcca 249

<210> 1597
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1597

acaacaacgg ctgttgttgc tgagcaaaca aaagcaattg cagctaaaat atcaaattgg 60

gacaatgtcg ttttggccta tgcgccagtt tgggccattg gaacaggaaa ggttgcaact 120

cctgctcagg gctcagaggt tcatgctgat taaggaaatg gggtcatgac aatgtgagtt 180

ctgaagttgc cgcatctgta ggaataatct atggaggctc tgtaaatgga ggaaactgca 240

aagaattg 248

<210> 1598
<211> 255
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (58),(64)
<223> unsure at all n locations

<400> 1598

gtattgttga acaagggttt ctctgtctgc ttcttcactt tctctcgttt caatcganac 60

caanacaaaa tcatgggcag aaaattcttc gttggtggca actggaaatg caatgggacc 120

actgaggagg taaagaagat tgttactact ttgaatgagg ctaaagtccc tggagaagat 180

gtcgtagaag ttgttgtgag ccctcctttt gtgttccttc ctgttgtaaa aagtttgctg 240

cgccctgatt tccat 255

<210> 1599
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1599

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc 240

tgatttccat gtttcggcac aaa 263

<210> 1600
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1600

tgttgaacaa gggtttctct gtctgcttct tcactttctc acgtttcaat cgaaaccaaa 60

acaaaaacat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg 120

aggaggtaaa gaagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct accttttgtg ttcctacctg ttgtaaaaag tttgctgcgc 240

cctgatttcc a 251

<210> 1601
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1601

tgaacaaggg tttctctgtc tgcttcttca ctttctctcg tttcaatcga aaccaaaaca 60

aaaacatggg cagaaaattc ttcgtcggtg gcaactggaa atgcaatggg accactgagg 120

aggtaaagaa gattgttact actttgaatg aggctaaagt ccctggagaa gatgtcgtag 180

aagttgttgt gagccctcct tttgtgttcc ttcctgttgt aaaaagtttg ctgcgccctg 240

atttccatgt ttcgg 255

<210> 1602
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 1602

tgttgaacaa gggtttctct gtctgcttct tcactttctc tcgtttcaat cgaaaccaaa 60

acaaaaacat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg 120

aggaggtaaa gaagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct ccttttgtgt tccttcctgt tgtaaaaagt ttgctgcgcc 240

ctgatt 246

<210> 1603
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1603

attgttgaac aagggtttct ctgtctgctt cttcactttc tctcgtttca atcgaaacca 60

aaacaaaatc atgggcagaa aattcttcgt tggtggcaac tggaaatgca atgggaccac 120

tgaggaggta aagaagattg ttactacttt gaatgaggct aaagtccctg gagaagatgt 180

cgtagaagtt gttgtgagcc ctccttttgt gttccttcct gttgtaaaaa gtttgctgcg 240

ccctgattt 249

<210> 1604
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 1604

tgcttcttca ctttctctcg tttcaatcga aaccaaaaca aaaacatggg cagaaaattc 60

ttcgtcggtg gcaactggaa atgcaatggg accactgagg aggtaaagaa gattgttact 120

actttgaatg aggctaaagt cccgggggaa gatgtcgtag aagttgttgt gagccctcct 180

tttgtgttcc ttcctgttgt aaaaagtttg ctgcgccctg atttcca 227

<210> 1605
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1605

gttgagcaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtagaaagtt tgctgcgccc 240

tgatttccat gtttcggcac aaaact 266

<210> 1606
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1606

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc 240

tgatttccat gtttcggc 258

<210> 1607
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 1607

tgttgaacaa gggtttctct gtctgcttct tcactttctc tcgtttcaat cgaaaccaaa 60

acaaaaacat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg 120

aggaggtaaa gaagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct ccttttgtgt tccttcctgt tgtaaaaagt ttgctgcgcc 240

ct 242

<210> 1608
<211> 252
<212> nucleic acid
<213> Glycine max

<220>

<221> unsure
<222> (17),(23),(29)...(30),(76)...(77),(98),(103),(132),
(206)
<223> unsure at all n locations

<400> 1608

gttgaacaag ggtttcnctg tcnccttcnn cactttctct ccgtttcaat cgaaaccaaa 60

acaaaatcat gggcannaaa ttcttcgttg gtggcaantg ganatgcaat gggaccactg 120

aggaggtaaa gnagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct cctttngtgt tccttcctgt tgtaaaaagt ttgctgcgcc 240

ctgatttcca tg 252

<210> 1609
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1609

tttctctttc tctttctctg tctgcttctt cactttctct cgtttcaatc gaaaaaaatc 60

atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac tgaggaggtg 120

aagaagattg ttactacttt aaatgaagct aaagtccctg gagaagatgt tgtagaagtt 180

gttgtgagcc ctccttttgt gttccttcct tttgtaaaaa gtttgctggc gccctgattt 240

ccatgtctcg gcccaaaatt gttggg 266

<210> 1610
<211> 339
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (334)
<223>

<400> 1610

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactg 120

aggaggtaaa gaagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct ccttttgtgt tccttcctgt tgtaaaaagt ttgctgcgcc 240

ctgattccat gtttcggcac aaaactgttg ggttcgcaaa gtggtgctta taccggaggt 300

tagtgctgaa atgctgttaa ttgggaatcc cctngggaa 339

<210> 1611
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1611

attgtattgt tgaacaaggg tttctctgtc tgcttcttca ctttctctcg tttcaatcga 60

aaccaggttg aggacatggg cagaaaattc ttcgtcggtg gcaactggaa atgcaatggg 120

accactgagg aggtaaagaa gattgttact actttgaatg aggctaaagt ccctggagaa 180

gatgtcgtag aagttgttgt gagccctcct tttgtgttcc ttcctgttgt aaaaagtttg 240

ctgcgccctg atttccatgt ttcggcacaa aa 272

<210> 1612
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (21),(31),(46),(218),(241)
<223> unsure at all n locations

<400> 1612

ggtttctctt tctctttctc ngtctgcttc ntcactttct ctcgtntcaa tcgaaaaaaa 60

tcatgggcag aaaattcttc gtcggtggca actggaaatg caatgggacc actgaggagg 120

tgaagaagat tgttactact ttaaatgaag ctaaagtccc tggagaagat gttgtagaag 180

ttgttgtgag ccctcctttt gtgttccttc ctttgtanaa agtttgctgc gccctgattt 240

nccatgtctc ggcccaaaat tgtt 264

<210> 1613
<211> 190
<212> nucleic acid
<213> Glycine max

<400> 1613

ttaaaatcat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg 60

aggaggtgaa gaagattgtt actactttaa atgaagctaa agtccctgga gaagatgttg 120

tagaagttgt tgtgagccct ccttttgtgt tccttccttt tgtaaaaagt ttgctgcgcc 180

ctgatttcca 190

<210> 1614
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1614

caatgaacaa gggtttctct ttctctttct ctgtctgctt cttcactttc tctcgtttca 60

atcgaaaaaa atcatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac 120

cactgaggag gtgaagaaga ttgttactac tttaaatgaa gctaaagtcc ctggagaaga 180

tgttgtagaa gttgttgtga gccctccttt tgtgttcctt ccttttgtaa aaagtttgct 240

gcgccctga 249

<210> 1615
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 1615

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaagttt gctgcgccct 240

gatttccatg tttcggc 257

<210> 1616
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 1616

ctcgagccgg ttgaacaagg gtttctctgt ctgcttcttc actttctctc gtttcaatcg 60

aaaccaaaac aaaaacatgg gcagaaaatt cttcgtcggt ggcaactgga aatgcaatgg 120

gaccactgag gaggtaaaga agattgttac tactttgaat gaggctaaag tccctggaga 180

agatgtcgta gaagttgttg tgagccctcc ttttgtgttc cttcctcttg taaaaag 237

<210> 1617
<211> 245
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (190)
<223>

<400> 1617

gtagaactga acaagggttt ctctttctct ttctctgtct gcttcttcac tttctctcgt 60

ttcaatcgca aaaaaatcat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat 120

gggaccactg aggaggtgaa gaagattgtt actactttaa atgaagctaa agtccctgga 180

gaagatgttn aagaagttgt tgtgagccct ccttttgtgt tccttccttt gtaaaaagtt 240

tgctg 245

<210> 1618
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1618

agggtttctc tttctctttc tctgtctgct tcttcacttt ctctcgttca atcgaaaaaa 60

atcatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac cactgaggag 120

gtgaagaaga ttgttactac tttaaatgaa gctaaagtcc ctggagaaga tgttgtagaa 180

gttgttgtga gccctccttt tgtgttcctt ccttttgtaa aaagtttgct gcgccctgat 240

ttccatgtct cggcccaaa 259

<210> 1619
<211> 241
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (221)
<223>

<400> 1619

ggtttctctt tctctttctc tgtctgcttc ttcactttct ctcgtttcaa tcgaaaaaaa 60

tcatgggcag aaaattcttc gtcggtggca actggaaatg caatgggacc actgaggagg 120

tgaagaagat tgttactact ttaaatgaag ctaaagtccc tggagaagat gttgtagaag 180

ttgttgtgag ccctcctttt gtgttcctcc ttttgtaaaa ngtttgctgc gccctgattt 240

c 241

<210> 1620
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1620

tacggctgcg agaagacgac agaaggggac tcgcagttgt attgttgaac aagggtttct 60

ctgtctgctt cttcactttc tctcgtttca atcgaaacca aaacaaaaac atgggcagaa 120

aattcttcgt cggtggcaac tggaaatgca atgggaccac tgaggaggta aagaagattg 180

ttactacttt gaatgaggct aaagtccctg gagaagatgt cgtagaagtt gttgtgagcc 240

ctccttttgt gttccttcct gttgtaaaaa gt 272

<210> 1621
<211> 221
<212> nucleic acid
<213> Glycine max

<400> 1621

tgttgaacaa gggtttctct gtctgcttct tcactttctc tcgtttcaat cgaaaccaaa 60

acaaaaacat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg 120

aggaggtaaa gaagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct ccttttgtgt tccttcctgt t 221

<210> 1622
<211> 266

<212> nucleic acid
<213> Glycine max

<400> 1622

aacggctgcg agaagacgac agaaggggc agttgtattg ttgaacaagg gtttctctgt 60

ctgcatcttc gctttctctc gtttcaatcg aaaccaaaac aaaaacatgg gcagaaaatt 120

cttcgtcggt ggcaactgga aatgcaatgg gaccactgag gaggtaaaga agattgttac 180

tactttgaat gaggctaaag tccctggaga agatgtcgta gaagttgttg tgagccctcc 240

ttttgtgttc cttcctgttg taaaaa 266

<210> 1623
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 1623

ggctgcgaga agacgacaga aggggactcg cagttgtatt gttgaacaag ggtttctctg 60

tctgcttctt cactttctct cgtttcaatc gaaaccaaaa caaaaacatg ggcagaaaat 120

tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga ggaggtaaag aagattgtta 180

ctactttgaa tgaggctaaa gtccctggag aagatgtcgt agaagttgtt gtgagccctc 240

cttttgtgtt ccttcctgtt 260

<210> 1624
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1624

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc 240

tgatttccat gtttcggcac aaaactgttg ggt 273

<210> 1625
<211> 257

<212>	nucleic acid
<213>	Glycine max

<220>
<221>	unsure
<222>	(89),(127),(195),(206),(219),(229),(232),(239),(245)
<223>	unsure at all n locations

<400>	1625

ctctctcttt ctctgtctgc ttcttcactt tctctcgttt caatcgaaaa aaatcatggg 60

cagaaaattc ttcgtcggtg gcaactggna atgcaatggg accactgagg aggtgaagaa 120

gattgtnact actttaaatg aagctaaagt ccctggagaa gatgttgtag aagttgttgt 180

gagccctcct ttgtnctcca tccttngtaa aaatttgcng cgcccggant tncatgtcng 240

ggccnaaatt gttgggt 257

<210>	1626
<211>	272
<212>	nucleic acid
<213>	Glycine max

<400>	1626

cgctgtttcg acggtcacac gcagttgtat tgtagaactg accaagggtt tctctttctc 60

tttctctgtc tgcttcttca ctttctctcg tttcaatcga aaaaaatcat gggcagaaaa 120

ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg atgaggtgaa gaagattgtt 180

actactttaa atgaagctaa agtccctgga gaagatgttg tagaagttgt tgtgagccct 240

cctttgtgt tccttccttt tgtaaaaagt tt 272

<210>	1627
<211>	253
<212>	nucleic acid
<213>	Glycine max

<400>	1627

tacggctgcg agaagacgac agaaggggac tcgcagttgc attgttgaac aagggtttct 60

ctgtctgctt cttcactttc tctcgtttca atcgaaacca aaacaaaaac atgggcagaa 120

aattcttcgt cggtggcaac tggaaatgca atgggaccac tgaggaggta aagaagattg 180

ttactacttt gaatgaggct aaagtccctg gagaagatgt cgtagaagtt gttgtgagcc 240

ctccttttgt gtt 253

<210> 1628
<211> 148
<212> nucleic acid
<213> Glycine max

<400> 1628

aaaaacatgg gcagaaaatt cttcgtcggt ggcaactgga aatgcaatgg gaccactgag 60

gaggtaaaga agattgttac tactttgaat gaggctaaag tccctggaga agatgtcgta 120

gaagttgttg tgagccctcc ttttgtgt 148

<210> 1629
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1629

tacggctgcg agaagacgac agaagggggc agttgtattg ttgaacaagg gtttctctgt 60

ctgcttcttc actttctctc gtttcaatcg aaaccaaaac aaaaacatgg gcagaaaatt 120

cttcgtcggt ggcaactgga aatgcaatgg gaccactgag gaggtaaaga agattgttac 180

tactttgaat gaggctaaag tccctggaga agatgtcgta gaagttgttg tgagccctcc 240

ttttgtgttc cttcctgttg taaaaagt 268

<210> 1630
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1630

acggtcacac gcagttgtat tgtagaactg aacaagggtt tctctttctc tttctctgtc 60

tgcttcttca ctttctctcg tttcaatcga aaaaaatcat gggcagaaaa ttcttcgtcg 120

gtggcaactg gaaatgcaat gggaccactg aggaggtgaa gaagattgtt actactttaa 180

atgaagctaa agtccctgga gaagatgttg tagaagttgt tgtgagccct ccttttgtgt 240

tccttccttt tgtaaaaagt ttgct 265

<210> 1631

<211> 274
<212> nucleic acid
<213> Glycine max

<400> 1631

gtagaactga acaagggttt ctctttctct ttctctgtct gcttcttcac tttctctcgt 60

ttcaatcgaa aaaaatcatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg 120

ggaccactga ggaggtgaag aagattgtta ctactttaaa tgaagctaaa gtccctggag 180

aagatgttgt agaagttgtt gtgagccctc cttttgtgtt ccttcctttt gtaaaaagtt 240

tgctgcgcgc tgatttccat gtctcggccc aaaa 274

<210> 1632
<211> 255
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45),(61),(106),(110),(119),(123),(126),(130),
(141)...(143),(145),(161),(172)...(174),(194),(199),
(207)...(208),(216),(221),(228),(230),(238),(251)
<223> unsure at all n locations

<400> 1632

ctttctcttt ctctgtctgc ttcttcactt tctctcgttt caatngaaaa aaatcatggg 60

nagaaaattc ttcgtgcggt ggcaactgga aatgcaatgg gaccanttan gacgtgaana 120

agnttnttan tactttaaat nnngntaaag tccctggaga ngatgttgta gnnnttgttg 180

tgagccctcc tttngtgtnc cttcctnntg taaaangttt nctgcgcncn gatttccntg 240

tctcggccca naatt 255

<210> 1633
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1633

cgagaagacg acagaagggg gcagttgtat tgttgaacaa gggtttctct gtctgcttct 60

tcactttctc tcgtttcaat cgaaaccaaa acaaaaacat gggcagaaaa ttcttcgtcg 120

gtggcaactg gaaatgcaat gggaccactg aggaggtaaa gaagattgtt actactttga 180

atgaggctaa agtccctgga gaagatgtcg tagaagttgt tgtgagcctc cttttgtgtt 240

cttcctgttg taaaagttgc tg 262

<210> 1634
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1634

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caacaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtacaaagtt tgctgcgccc 240

tgatttccat gtttcggcac aaaa 264

<210> 1635
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 1635

gggtttctct ttctctttct ctgactgctt cttcactttc tctcgttgca atcgaaaaaa 60

atcatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac cactgaggag 120

gtgaagcaga ttgttactac tttaaatgaa gctaaagtcc ctggagaaga tgttgtagac 180

gttgttgtga gccctccttt tgtgttcctt ccttttgtaa aaagtttgct gcgccctgat 240

ttccatgtct cgga 254

<210> 1636
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 1636

tacggctgcg agaagacgac agaagggggc agttgtattg ttgaacaagg gtttctctgt 60

ctgcttcttc actttctctc gtttcaatcg aaaccaaaac aaaaacatgg gcagaaaatt 120

cttcgtcggt ggcaactgga aatgcaatgg gaccactgag gaggtaaaga agattgttac 180

tactttgaat gaggctaaag tccctggaga agatgtcgta gaagttgttg tgag 234

<210> 1637
<211> 193
<212> nucleic acid
<213> Glycine max

<400> 1637

gtttctcttt ctctttctct gtctgcttct tcactttctc tcgtttcaat cgaaaaaaat 60

catgggcaga aaattcttcg tcggtggcaa ctggaaatgc aatgggacca ctgaggaggt 120

gaagaagatt gttactactt taaatgaagc taaagtccct ggagaagatg ccgtagaagt 180

tgttgtgagc cct 193

<210> 1638
<211> 300
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (211)
<223>

<400> 1638

acggctgcga gaagacgaca gaaggggaca cgcagttgta ttgtagaact gaacaagggt 60

ttctctttct ctttctctgt ctgcttcttc actttctctc gtttcaatcg aaaaaaatca 120

tgggcagaaa attcttcgtc ggtggcaact ggaaatgcaa tgggaccact gaggaggtga 180

agaagattgt tactacttta aatgaagcta nagtccctgg agaagatgtt gtagaagttg 240

ttgtgagcct ccttttgtgt tcttcctttt gtaaaaattg ctgcgcctga ttccagtctc 300

<210> 1639
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1639

aggctgtatt gtagaactga acaagggttt ctctttctct ttctctgtct gcttcttcac 60

tttctctcgt ttcaatcgaa aaaaatcatg ggcagaaaat tcttcgtcgg tggcaactgg 120

aaatgcaatg ggaccactga ggaggtgaag aagattgtta ctactttaaa tgaagctaaa 180

gtccctggag aagatgttgt agaagttgtt gtgagcctcc ttttgtgttc cttcttttgt 240

<210> 1640
<211> 278
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (233)
<223>

<400> 1640

ctgaacaagg gtttctcttt ctctttctct gtctgcctct tcactttctc tcgtttcaat 60

cgaaaaaatc atgggcagaa aattcttccg tcggtggcaa ctggaaatgc aatgggacca 120

ctgaggaggt gaagaagatt gttatacttt aaatgaagct aaagtccctg gagaagatgt 180

tgtagaagtt gttgtgagcc ctccttttgt gttccttcct ttgtaaaaag ttngctgcgc 240

cctgatttcc atgtctcggc ccaaaattgt tgggttcg 278

<210> 1641
<211> 263
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (94),(107),(115),(149),(157),(172),(191),(211),(216)
<223> unsure at all n locations

<400> 1641

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaaacatg ggcagaaaat tattcgtcgg tggnaactgg aaatgcnatg ggacnactga 120

ggaggtaaag aagattgtta ctactttgna tgaggcnaaa gtccctggag angatgtcgt 180

agaagttgtt ntgaggcctc cttttgtgtt ncttcnccgt tgtaaaaagt ttgctgcgcc 240

ctgatttcca tgtttcggca caa 263

<210> 1642
<211> 238
<212> nucleic acid

<213> Glycine max

<400> 1642

aacaagggtt tctctgtctg cttcttcact ttctctcgtt tcaatcgaaa ccaaaacaaa 60

aacatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac cactgaggag 120

gtaaagaaga ttgttactac tttgaatgag gctaaagtcc ctggagaaga tgtcgtagaa 180

gttgttgtga gccctccttt tgtgttcctt cctgttgtaa aaagtttgct gcgccctg 238

<210> 1643
<211> 266
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (8),(20),(45),(122),(132),(260),(262)
<223> unsure at all n locations

<400> 1643

gttgaacnag ggtttctctn tctgcttctt cactttctct cgttnccaat cgaaaccaaa 60

acaaaatcat gggcagaaaa ttcttcgttg gtggcaactg gaaatgcaat gggaccactg 120

angaggtaaa gnagattgtt actactttga atgaggctaa agtccctgga gaagatgtcg 180

tagaagttgt tgtgagccct cctttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc 240

tgatttccat gtttcggcan anactg 266

<210> 1644
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1644

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaatcatg ggcagaaaat tcttcgttgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaagttgtt gtgagcctcc ttttgtgttc cttcctgttg taaaaagttt gctgcgccct 240

gatttccatg tttcgg 256

<210>	1645
<211>	250
<212>	nucleic acid
<213>	Glycine max

<400>	1645

ctacagctgg ggactcgcag ttgtattgtt gaacaagggt ttctctgtct gcttcttcac 60

tttctctcgt ttcaatcgaa accaaaacaa aaacatgggc agaaaattct tcgtctgtgg 120

caactggaaa tgcaatggga ccactgagga ggtaaagaag attgttacta ctttgaatga 180

ggctaaagtc cctggagaag atgtcgtaga agttgttgtg agccctcttt tgtgttcctc 240

ctgttgtaaa 250

<210>	1646
<211>	264
<212>	nucleic acid
<213>	Glycine max

<400>	1646

acggctgcga gaagacgaca gaaggggact cgcagttgta ttgttgaaca aggggttctc 60

tgtctgcttc ttcactttct ctcgtttcaa tcgaaaccaa aacaaaaaca tgggcagaaa 120

attcttcgtc ggtggcaact ggaaatgcaa tgggaccact gaggaggtaa agaagattgt 180

tactactttg aatgaggcta aagtcctgga agaagatgtc gtagaagttg ttgtgagccc 240

tccttttgtg ttccttcctg ttgt 264

<210>	1647
<211>	267
<212>	nucleic acid
<213>	Glycine max

<400>	1647

gtagtactga tcaagggtgt ctgtttctat gtctctgtgt gtttcgtcac tttctctcgt 60

ttcaatcgaa aaagatcatg ggtagaagat tagtcgtcgg tggcaactgg aaatgcaatg 120

ggaccactga ggaggtgaag aagattgtta ctactttaaa tgaggctaaa gtccctggag 180

aagatgttgt tgaagttgtt gtgagccgcc ttttgtgttc ctccttttgt agaggtttgc 240

tgcgcctgga tttccatgtc tcggccc 267

<210> 1648
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1648

gtagaactga acaagggttt ctctttctct ttctctgtct gcttcttcac tttctctcgt 60

ttcaatcgaa aaaaatcatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg 120

ggaccactga ggaggtgaag aagattgtta ctactttaaa tgaagctaaa gtccctggag 180

aagatgttgt agaagttgtt gtgagcctcc ttttgtgttc cttcctttgt aaaaagtt 238

<210> 1649
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1649

gaacaagggt ttctctttct ctttctctgt ctgcttcttc actttctctc gtttcaatcg 60

aaaaaaatca tgggcagaaa attcttcgtc ggtggcaact ggaaatgcaa tgggaccact 120

gaggaggtga agcagattgt tactacttta aatgaagcta cagtccctgg agaagatgtt 180

gtagaagttg ttgtgagccc tccttttgtg ttccttcctt ttgtaaaaag tttgctgcgc 240

cctgatttcc atgtctcggc ccaaaattgt tgg 273

<210> 1650
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1650

acggctgcga gaagacgaca gaaggggact cgcagttgta ttgttgaaca agggtttctc 60

tgtctgcttc ttcactttct ctcgtttcaa tcgaaaccaa aacaaaaaca tgggcagaaa 120

attcttcgtc ggtggcaact ggaaatgcaa tgggaccact gaggaggtaa agaagattgt 180

tactactttg aatgaggcta aagtccctgg aagagatgtc gtagaagttg ttgtgagccc 240

<210> 1651
<211> 252
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (41)...(42)
<223> unsure at all n locations

<400> 1651

gcgcattatt ataaagagtg ataaggttgt ttggacggtc nntcgcagtt gtattgttga 60

acaagggttt ctctgtctgc ttcttcactt tctctcgttt caatcgaaac caaaacaaaa 120

acatgggcag aaaattcttc gtcggtggca actggaaatg caatgggacc actgaggagg 180

taaagaagat tgttactact ttgaatgagg ctaaagtccc ggagaagatg tcgtagaagt 240

tgttgtgagc cc 252

<210> 1652
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 1652

gtagaactga acaagggttt ctctttctct ttctctgtct gcttcttcac tttctctcgt 60

ttcaatcgaa aaaaatcatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg 120

ggaccactga ggaggtgaag aagattgtta ctactttaaa tgaagctaaa gcccctggag 180

aagatgttgt agaagttgtt gtgagccctc cttttgtgtt ccttcctttt gtaaaaagtt 240

tgctgcgcgc tgatttccat gtctcggccc aaaa 274

<210> 1653
<211> 185
<212> nucleic acid
<213> Glycine max

<400> 1653

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 60

caaaatcatg ggcagaaaat tcttcgttgg tggcaactgg aaatgcaatg ggaccactga 120

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 180

agaag 185

<210> 1654

<211> 215
<212> nucleic acid
<213> Glycine max

<400> 1654

gcttcttcac tttctctcgt ttcaatcgaa aaaaatcatg ggcagaaaat tcttcgtcgg 60

tggcaactgg aaatgcaatg ggaccactga ggaggtgaag aagattgtta ctactttaaa 120

tgaagcgtaa gtcgctggag gagaatgtgt agaagtggtt gtgagcctcc tttttgtgtc 180

cttccttttt taaaaaattt gctggggcct gattt 215

<210> 1655
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1655

gaggaaactg caaagaattg gcagcacagc ccgatgttga tggatttttg gttggtggtg 60

catccctcaa ggcggaattt gtggacatca taaacgctgc tactgtgaag aagaattgaa 120

attcgtagtt aggaactgat aatgctgcct ttcaagctgc ttcggaaatt gctgtttttg 180

agttttggtt ctgtgctttg tggccaatgt attgaactct gtttagtacc tgaataaaca 240

tgctttcctt tgatctcatc catagg 266

<210> 1656
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1656

cgaaactgca aagaattggc agcacagccc gatgttgatg gatttttggt tggtggtgca 60

tccctcaagg cggaatttgt ggacatcata aacgctgcta ctgtgaagaa gaattgaaat 120

tcgtagttag gaactgataa tgctgccttt caagctgctt cggaaattgc tgtttttgag 180

ttttggttct gtgctttgtg gccaatgtat tgaactctgt ttagtacctg aataaacatg 240

ctttcctt 248

<210> 1657
<211> 254
<212> nucleic acid

<213> Glycine max

<400> 1657

aaagaattgg cagcacagcc cgatgttgat ggatttttgg ttggtggtgc atccctcaag 60

gcggaatttg tggacatcat aaacgctgct actgtgaaga agaattgaaa ttcgtagtta 120

ggaactgata tgctgccttt caagctgctt cggaaattgc tgtttttgag ttttggttct 180

gtgctttgtg gccaatgtat tgaactctgt ttagtacctg aataaacatg ctttcctttg 240

atctcatcca tagg 254

<210> 1658
<211> 225
<212> nucleic acid
<213> Glycine max

<400> 1658

aaagaattgg cagcacagcc cgatgttgat ggatttttgg ttggtggtgc atccctcaag 60

gcggaatttg tggacatcat aaacgctgct actgtgaaga agaattgaaa ttcgtagtta 120

ggaactgata atgctgcctt tcaagctgct tcggaaattg ctgtttttga gttttggttc 180

tgtgctttgt ggccaatgta ttgaactctg tttagtacct gaata 225

<210> 1659
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1659

aaagaattgg cagcacagcc cgatgttgat ggatttttgg ttggtggtgc atcactcaag 60

gcggaatttg tggacatcat aaacgctgct actgtgaaga agaattgaaa ttcgtagtta 120

ggaactgata atctgccttt caagctgctt cggaaattgc tgtttttgag ttttggttct 180

gtgctttgtg gccaatgtat tgaactctgt ttagtacctg aataaacatg ctttcctttg 240

atctcatcca taggcgat 258

<210> 1660
<211> 145
<212> nucleic acid
<213> Glycine max

<400> 1660

gaaaattctt cgtcggtggc aactggaaat gcaatgggac cactgaggag gtaaagaaga 60

ttgttactac tttgaatgag gctaaagtcc ctggagaaga tgtcgtagaa gttgttgtga 120

gccctccttt tgtgttcctt cctgt 145

<210> 1661
<211> 180
<212> nucleic acid
<213> Glycine max

<400> 1661

agaaaagggt ttctctgtct gcttcttcac tttctctcgt ttcaatcgaa accaaaacaa 60

aaacatgggc agaaaattct tcgtcggtgg caactggaaa tgcaatggga ccactgagga 120

ggtaaagaag attgttacta ctttgaatga ggctaaagtc cctggagaag atgtcgtaga 180

<210> 1662
<211> 98
<212> nucleic acid
<213> Glycine max

<400> 1662

ttgttttggc ctacgagcca gtttgggcca ttggaacagg aaaggttgct actcctgctc 60

aggctcaaga gggtccatgc tgatttgagg aaatgggt 98

<210> 1663
<211> 147
<212> nucleic acid
<213> Glycine max

<400> 1663

gctcgaggtt tctctttctc tttctctgtc tgcttcttca ctttctctcg tttcaatcga 60

aaaaaatcat gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg 120

aggaggtgaa gaagattgtt actactt 147

<210> 1664
<211> 265
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(15),(49),(54),(132),(134)...(135),(151),
(178)...(179),(212),(239),(255),(264)
<223> unsure at all n locations

<400> 1664

gtttctctnt ctctntctct gtctgcttct tcactttctc tcgtttcant cganaaaaat 60

catgggcaga aaattctcgt cggtggcaac tggaaatgca atgggaccac tgaggaggtg 120

aagaagattg tngnnactta aattgaagcc naaatcccct tggggaaatg ttgtagannt 180

tgttgtgagc cctccttttg tgttccttcc tntgtaaaaa gtttgctgcg ccctgattnc 240

cagtctcggg cccanaatgg tggng 265

<210> 1665
<211> 162
<212> nucleic acid
<213> Glycine max

<400> 1665

aactgaacaa gggtttctct ttctctttct ctgtctgctt cttcactttc tctcgtttca 60

atcgaaaaaa atcatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac 120

cactgaggag gtgaagaaga ttgttactac tttaaatgaa gc 162

<210> 1666
<211> 150
<212> nucleic acid
<213> Glycine max

<400> 1666

cgaacaaggg tttctctttc tctttctctg tctgcttctt cactttctct cgtttcaatc 60

gaaaaaaatc atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac 120

tgaggaggtg aagaagattg ttactacttt 150

<210> 1667
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1667

caaagataat tcttacagat gcagcacagc ccgatgttga tggatttttg gttggtggtg 60

catccctcaa ggcggaattt gtggacatca taaacgctga tactgtgaag aagaattgaa 120

attcgtagtt aggaactgat aatgctgcct ttcaagctgc ttcggaaatt gctgtttttg 180

agttttggtt ctgtgctttg tggccaatgt attgaactct gtttagtacc tgaataaaca 240

tgctttcctt tgatctcatc cat 263

<210> 1668
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 1668

aaagaattgg aagcacagcc cgatgttgat ggatttttgg ctggtggtgc atccctcaag 60

gcggaatttg tggacatcat aaacgctgct actgtgaaga agaattgaaa ttcgtagtta 120

ggaactgata atgctgcctt tcaagctgct tcggaaattg ctgtttttga gttttggttc 180

tgtgctttgt ggccaatgta ttgaactctg tttagtacct gaataaacat gctttccttt 240

gatctca 247

<210> 1669
<211> 195
<212> nucleic acid
<213> Glycine max

<400> 1669

tacggctgcg agaagacgac agaaggggac acgcagttgt attgtagaac tgaacaaggg 60

tttctctttc tctttctctg tctgcttctt cactttctct cgtttcaatc gaaaaaaatc 120

atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac tgaggaggtg 180

aagaagattg ttact 195

<210> 1670
<211> 271
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (12),(35),(130)
<223> unsure at all n locations

<400> 1670

cttattggag anaatgatga gtttataggg aaganagctg cctatgcttt gagccaaggt 60

cttggggtga ttgcatgcat tggagacttg ttagaagaaa gggaggctgg aaaaactact 120

gatgtttgtn ttcagcaatt gaaggcttat gcagacgcag ttgctagttg ggacaacatt 180

gttattgcat atgaacctgt atgggccatt ggaacgggca aagtcgccac tccccaacaa 240

gctcaggaag tacatgtagc tgttcgggat t 271

<210> 1671
<211> 322
<212> nucleic acid
<213> Glycine max

<400> 1671

cttcgatggc ggcaacctca acatcactgg cttctcaact ctacattggc ctgcgccgcc 60

cctgcctcaa gctcgattct ttcaattctc aatctttctc tctcttcgac cctaatcttc 120

gcctatccct ctctccaccc aaaccctcac gcgccgtcat cgccatggcc ggcaccggga 180

agttctttgt tggtggcaac tggaagtgta acggaacaaa agactcaatc agcaagcttg 240

ttgctgactt gaacaatgca aaattggagc ctgatgttga tgttgtcgtt gcacctccct 300

tcctctacat cgatcaagtg aa 322

<210> 1672
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1672

gcaacctcaa catcactggc ttctcaactc tacattggcc tgcgccgccc ctgcctcaag 60

ctcgattctt tcaattctca atctttctct ctcttcgacc ctaatcttcg cctatccctc 120

tctccaccca aaccctcacg cgccgtcatc gccatggccg gcaccgggaa gttctttgtt 180

ggtggcaact ggaagtgtaa cggaacaaaa gactcaatca gcaagcttgt tgctgacttg 240

aacaatgca 249

<210> 1673
<211> 257

<212> nucleic acid
<213> Glycine max

<400> 1673

ggcaacctca acatcactgg cttctcaact ctacattggc ctgcgccgcc cctgcctcaa 60

gctcgattct ttcaattctc aatctttctc tctcttcgac cctaatcttc gcctatccct 120

ctctccaccc aaaccctcac gcgccgtcat cgccatggcc ggcaccggga agttctttgt 180

tggtggcaac tggaagtgta acggaacaaa agactcaatc agcaagcttg ttgctgactt 240

gaacaatgca aaattgg 257

<210> 1674
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 1674

gtttttgttc ttcgatggcg gcaacctcaa catcactggc ttctcaactc tacattggcc 60

tgcgccgccc ctgcctcaag ctcgattctt tcaattctca atctttctct ctcttcgacc 120

ctaatcttcg cctatccctc tctccaccca aaccctcacg cgccgtcatc gccatggccg 180

gcaccgggaa gttctttgtt ggtggcaact ggaagtgtaa cgggaacaaa agactcaatc 240

agcaagcttg ttgctgactt gaacaatgca aaatt 275

<210> 1675
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 1675

ctgtgttcct gtttttgttc ttcgatggcg gcaacctcaa catcactggc ttctcaactc 60

tacattggcc tgcgccgccc ctgcctcaag ctcgattctt tcaattctca atctttctct 120

ctcttcgacc ctaatcttcg cctatccctc tctccaccca aaccctcacg cgccgtcatc 180

gccatggccg gcaccgggaa gttctttgtt ggtggcaact ggaagtgtaa cggaacaaaa 240

gactcaatca gcaagcttgt tgctgacttg aacaatgcaa aattgga 287

<210> 1676
<211> 272

<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (122),(149),(235)
<223> unsure at all n locations

<400> 1676

gatggcggca acctcaacat cactgggctt ctcaactcta cattggcctg gcgccgcccc 60

tgcctcaagc tcgattcttt caattctcaa tctttctctc tcttcgaccc taatcttcgc 120

cnatccctct ctccacccaa accctcacna caccgtcatc gccatggccg gcaccgggaa 180

gttctttgtt ggtggcaact ggaagtgtaa cggaacaaaa gactcaatca gcaancttgt 240

tgctgacttg aacaatgcaa aattggagcc tg 272

<210> 1677
<211> 287
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (118),(233)
<223> unsure at all n locations

<400> 1677

ctgtgttcct gtttttgttc ttcgatggcg gcaacctcaa catcactggc ttctcaactc 60

tacattggcc tgcgccgccc ctgcctcaag ctcgattctt tcaattctca atctttcnct 120

ctcttcgacc ctaatcttcg cctatccctc tctccaccca aaccctcacg cgccgtcatc 180

gccatggccg gcaccgggaa gttctttgtt ggtggcaact ggaagtgtaa cgnaacaaaa 240

gactcaatca gcaagcttgt tgctgacttg aacaatgcaa aattgga 287

<210> 1678
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 1678

tgtttttgtt cttcgatggc ggcaacctca acatcactgg cttctcaact ctacattggc 60

ctgcgccgcc cctgcctcaa gctcgattct ttcaattctc aatctttctc tctcttcgac 120

cctaatcttc gcctatccct ctctccaccc aaaccctcac gcgccgtcat cgccatggcc 180

ggcaccggga agttctttgt tggtggcaac tggaagtgta acggaacaaa agactcaatc 240

agcaagcttg ttgctgcttg acatgcaaat ggag 274

<210> 1679
<211> 247
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (17),(51)
<223> unsure at all n locations

<400> 1679

ctgtgttcct gtttttnttc ttcgatggcg gcaacctcaa catcactgga ntctcaactc 60

tacattggcc tgcgccgccc ctgtctcaag ctcgattctt tcaattctca atctttctct 120

ctcttcgacc ctaatcttcg cctatccctc tctccaccca aaccctcacg cgccgtcatc 180

gccatggccg gcaccgggaa gttctttgtt ggtggcaatg gaagtgtaac gcaacaaaag 240

actcaat 247

<210> 1680
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 1680

gttcctgttt ttgttcttcg atggcggcaa cctcaacatc actggcttct caactctaca 60

ttggcctgcg ccgcccctgc ctcaagctcg attctttcaa ttctcaatct ttctctctct 120

tcgaccctaa tcttcgccta tccctctctc cacccaaacc ctcacgcgcc gtcatcgcca 180

tggccggcac cgggaagttc tttgttggtg gcaactggaa gtgtaaggaa caaaagactc 240

a 241

<210> 1681
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1681

cactgtgttg ctgtttttgt tcttcgatgg cggcaacctc aacatcactg gcttctcaac 60

tctacattgg cctgcgccgc ccctgcctca agctcgattc tttcaattct caatctttct 120

ctctgttcga ccctaatctt cgcctatccc tctctccacc caaaccctca cgcgccgtca 180

tcgccatggc cggcaccggg aagttctttg ttggtggcaa ctggaagtgt aacgaaacaa 240

aagactcaat cag 253

<210> 1682
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1682

ctcgagcgtt ttgttcttcg atggcggcaa cctcaacatc actggcttct caactctaca 60

ttggcctgcg ccgcccctgc ctcaagctcg attctttcaa ttctcaatct ttctctctct 120

tcgaccctaa cttcgcctat ccctctctcc acccaaaccc tcacgcgccg tcatcgccat 180

ggccggcacc gggaagttct ttgttggtgg caactggaag tgtaaggaac aaaagactca 240

<210> 1683
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1683

gtgttcctgt ttttgttctt cgatggcggc aacctcaaca tcactggctt ctcaactcta 60

cattggcctg cgccgcccct gcctcaagct cgattctttc aattctcaat ctttctctct 120

cttcgaccct aatcttcgcc tatccctctc tccacccaaa ccctcacgcg ccgtcatcgc 180

catggccggc accgggaagt tctttgttgg tggcaactgg aagtgtaacg gaacaaaaga 240

<210> 1684
<211> 198
<212> nucleic acid
<213> Glycine max

<400> 1684

ctgacttgaa cagtgcaaca ttggagtctg atgttgatgt tgttgttgca cctccctttg 60

tgtacatcga tcaggtgaaa aactcaatta cagataggat tgaaatttct gcccagaatt 120

cttgggtggg aaaaggtggg gctttcacgg gagaaatcag tgtggagcaa ctaaaagacc 180

ttggctgcaa gtgggtta 198

<210> 1685
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 1685

ctcaattaca gataggattc agattttcac ctgatcgatg tacacaaagg gaggtgcaac 60

aacaacatca acatcagact ccactgttgc acctcccttt gtgtacatcg atcaggtgaa 120

aaactcaatt acagatagga ttgaacttct gcccagaatt cttgggtggg aaaaggtggg 180

gctttcacgg gagaaatcag attggagcaa ctaaaagacc ttggctgcaa gtgggctatt 240

cttggacatt ctgagcgcag acatgtaatt ggagcaaatg at 282

<210> 1686
<211> 377
<212> nucleic acid
<213> Glycine max

<400> 1686

ctttctcttt ctctgtctgc ttcttcactt tctctcgttg gaatcgaaaa aaatcatggg 60

cagaaaattc ttcgtcggtg gcaactggaa atgcaatggg accactgagg aggtgaagaa 120

gattgttact actttaaatg aagctaaagt ccctggagaa gatgttgtag aagttgttgt 180

gagccctcct tttgtgttcc ttccttttgt aaaaagtttg ctgcgccctg atttccatgt 240

ctcggcccaa aattgttggg ttcgcaaagg tggtgcttat actggagagg ttagtgctga 300

aatgcttgtt aatttgggaa ttccttgggt tattattggt cactctgaac ggaggcagct 360

tttgaatgaa tcaaatg 377

<210> 1687
<211> 426
<212> nucleic acid
<213> Glycine max

<400> 1687

ccgggccgac ccaaacgtca gtacggctgc gagaagacaa cagaaggggg aacaagggtt 60

tctctttctc tttctctgtc tgcttcttca ctttctctcg tttcaatcga aaaaaatcat 120

gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg aggaggtgaa 180

gaagattgtt actactttaa atgaagctaa agtccctgga gaagatgttg tagaagttgt 240

tgtgagccct ccttttgtgt tccttccttt tgtaaaaagt ttgctgcgcc ctgatttcca 300

tgtctcggcc caaaattgtt gggttcgcaa aggtggtgct tatactggag aggttagtgc 360

tgaaatgctt gttaatttgg gaattccttg ggttattatt ggtcactctg aacggaggca 420

gctttt 426

<210> 1688
<211> 405
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (367)
<223>

<400> 1688

agtacggctg cgagaagacg acagaagggt gaatcaaacg agtttgtggg agataaagtt 60

gcctatgcac ttcaacaagg tctaaaagtt attgcatgca ttggggagac tctcgaacag 120

cgtgaagctg gtacaacaac ggctgttgtt tctgagcaaa caaaagcaat tgcagctaaa 180

atatcaaatt gggacaatgt tgttttggcc tacgagccag tttgggccat tggaacagga 240

aaggttgcta ctcctgctca ggctcaagag gtccatgctg atttgaggaa atgggttcat 300

gacaatgtga gtgccgaagt tgctgcatct gtaagaatta tctatggagg ttctgtaaat 360

ggaaganact gcaaaaaatt ggccgcacag cccgatgttg atgga 405

<210> 1689
<211> 387
<212> nucleic acid
<213> Glycine max

<400> 1689

gtcacacgca gttgtattgt agaactgaac aagggtttct ctttctcttt ctctgtctgc 60

ttcttcactt tctctcgttt caatcgaaaa aaatcatggg cagaaaattc ttcgtcggtg 120

gcaactggaa atgcaatggg accactgagg aggtgaagaa gattgttact actttaaatg 180

aagctaaagt ccctggagaa gatgttgtag aagttgttgt gagccctcct tttgtgttcc 240

ttccttttgt aaaaagtttg ctgcgccctg atttccatgt ctcggcccaa aattgttggg 300

ttcgcaaagg tggtgcttat actggagagg ttagtgctga aatgcttgtt aatttgggaa 360

ttccttgggt tattattggt cactctg 387

<210> 1690
<211> 419
<212> nucleic acid
<213> Glycine max

<400> 1690

ggtcgacgac gcgtccatac ggcagcgaga agacgacaga aggggactcg cagttgtatt 60

gttgaacaag ggtttctctg tctgcttctt cactttctct cgtttcaatc gaaaccaaaa 120

caaaaacatg ggcagaaaat tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga 180

ggaggtaaag aagattgtta ctactttgaa tgaggctaaa gtccctggag aagatgtcgt 240

agaagttgtt gtgagccctc cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc 300

tgatttccat gtttcggcac aaaactgttg ggttcgcaaa ggtggtgctt ataccggtga 360

ggttagtgct gaaatgcttg ttaatttggg aattccttgg gttattattg gtcactctg 419

<210> 1691
<211> 400
<212> nucleic acid
<213> Glycine max

<400> 1691

agacggctgc gagaagacga cagaaggggg cagttgtatt gttgaacaag ggtttctctg 60

tctgcttctt cactttctct cgtttcaatc gaaaccaaaa caaaaacatg ggcagaaaat 120

tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga ggaggtaaag aagattgtta 180

ctactttgaa tgaggctaaa gtccctggag aagatgtcgt agaagttgtt gtgagccctc 240

cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc tgatttccat gtttcggcac 300

aaaactgttg ggttcgcaaa ggtggtgctt ataccggtga ggttagtgct gaaatgcttg 360

ttaattttgg gattcccttg ggtataatgg gtcactctga 400

<210> 1692
<211> 367
<212> nucleic acid
<213> Glycine max

<400> 1692

ccggctcgac ccacgagtaa gcccacgcgt ccgacggctg cgagaagacg acagaagggg 60

attgtagaac tgaacaaggg tttctctttc tctttctctg tctgcttctt cactttctct 120

cgtttcaatc gaaaaaaatc atgggcagaa aattcttcgt cggtggcaac tggaaatgca 180

atgggaccac tgaggaggtg aagaagattg ttactacttt aaatgaagct aaagtccctg 240

gagaagatgt tgtagaagtt gttgtgagcc ctccttttgt gttccttcct tttgtaaaaa 300

gtttgctgcg ccctgatttc catgtctcgg cccaaaattg ttgggttcgc aaaggtggtg 360

cttatac 367

<210> 1693
<211> 371
<212> nucleic acid
<213> Glycine max

<400> 1693

agacggctgc gagaagacga cagaaggggg cagttgtatt gttgaacaag ggtttctctg 60

tctgcttctt cactttctct cgtttcaatc gaaaccaaaa caaaaacatg ggcagaaaat 120

tcttcgtcgg tggcaactgg aaatgcaatg ggaccactga ggaggtaaag aagattgtta 180

ctactttgaa tgaggctaaa gtccctggag aagatgtcgt agaagttgtt gtgagccctc 240

cttttgtgtt ccttcctgtt gtaaaaagtt tgctgcgccc tgatttccat gtttcggcac 300

aaaactgttg ggttcgcaaa ggtggtgctt ataccggtga ggttagtgct gaaatgcttg 360

ttaatttggg a 371

<210> 1694
<211> 387
<212> nucleic acid
<213> Glycine max

<400> 1694

acgcccacgc gtccgtacgg ctgcgagaag acgacagaag ggattgtag aactgaacaa 60

gggtttctct ttctctttct ctgtctgctt cttcactttc tctcgtttca atcgaaaaaa 120

atcatgggca gaaaattctt cgtcggtggc aactggaaat gcaatgggac cactgaggag 180

gtgaagaaga ttgttactac tttaaatgaa gctaaagtcc ctggagaaga tgttgtagaa 240

gttgttgtga gccctccttt tgtgttcctt ccttttgtaa aaagtttgct gcgccctgat 300

ttccatgtct cggcccaaaa ttgttgggtt cgcaaaggtg gtgcttatac tggagaagtt 360

agtgctgaaa tgcttgttaa tttggga 387

<210> 1695
<211> 384
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (244)
<223>

<400> 1695

gggccgagcc acgcgtccat acggatgcga gaagacgaca gaagggggta ttgtagaact 60

gaacaagggt ttctctttct ctttctctgt ctgcttcttc actttctctc gtttcaatcg 120

aaaaaaatca tgggcagaaa attcttcgtc ggtggcaact ggaaatgcaa tgggaccact 180

gaggaggtga agaagattgt tactacttta aatgaagcta aagtccctgg agaagatgtt 240

gtanaagttg ttgtgagccc tccttttgtg ttccttcctt ttgtaaaaag tttgctgcgc 300

cctgatttcc atgtctcggc ccaaaattgt tgggttcgca aaggtggtgc ttatactgga 360

gaagttagtg ctgaaatgct tgtt 384

<210> 1696
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1696

gataaagttg cctatgcact tcaacaaggt ctaaaagtta ttgcatgcat tggggagact 60

ctcgaacagc gtgaagctgg tacaacaacg gctgttgttt ctgagcaaac aaaagcaatt 120

gcagctaaaa tatcaaattg ggacaatgtc gttttggcct acgagccagt ttgggccatt 180

ggaacaggaa aggttgctac tcctgctcag gctcaagagg tccatgctga tttgaggaaa 240

tgggttcatg acaatgtgag tgctg 265

<210> 1697
<211> 421
<212> nucleic acid
<213> Glycine max

<400> 1697

gttcgcaaag gtggtgctta tactggagag gttagtgctg gaatgcttgt taattgggga 60

attccttggg ttattattgg tcactctgaa cggaggcagc ttttgaatga atcaaatgag 120

tttgtgggag ataaagttgc ctatgcactt caacaaggtc tgaaagttat agcatgcatt 180

ggggaaactc ttgaacagcg tgaagctggt acaacaacgg ctgttgttgc tgagcaaaca 240

aaagcaattg cagctaaaat atcaaattgg gacaatgtcg ttttggccta tgagccagtt 300

tgggccattg gaacaggaaa ggttgcaact cctgctcatg ctcaagaggt tcatgctgat 360

ttaaggaaat gggttcatga caatgtgagt gctgaagttg ctgcatctgt aagaattatc 420

t 421

<210> 1698
<211> 325
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (179)
<223>

<400> 1698

acgaccacgc gtccgtacgg ctgcgagaag acgacagaag gggactcgca gttgtattgt 60

tgaacaaggg tttctctgtc tgcttcttca ctttctctcg tttcaatcga aaccaaaaca 120

aaaacatggg cagaaaattc ttcgtcggtg gcaactggaa atgcaatggg accactgang 180

aggtaaagaa gattgttact actttgaatg aggctaaagt ccctggagaa gatgtcgtag 240

aagttgttgt gagccctcct tttgtgttcc ttcctgtcgt aaaaagtttg ctgcgccctg 300

atttccatgt ttcggcacaa aactg 325

<210> 1699
<211> 393
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (258)
<223>

<400> 1699

aaaagacgac agaaagggaa tcccaatttg aatggttaac aaagggttcc ccggccggct 60

cctcaacttc cccccgttcc aaccaaaccc aaaccaaaat catgggcaaa aaatcctccg 120

ccggtggcaa ctggaaatgc aatgggacca ctgaagaggt aaagaaaatt gttactactt 180

tgaatgacgc taaagtccct ggagaagatg tcgtagaagt tgttgtgagc cctccttttg 240

tgttccttcc tgttgtanaa agtttgctgc gccctgattc ccatgtttcg gcacaaaact 300

gttgggttcg caaaagtggt gcttataccg gtgaggttag tgctgaaatg cttgttaatt 360

tgggaattcc ttgggttatt attggtcact ctg 393

<210> 1700
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1700

tacggctgcg agaagacgac agaaggggac tcgcagttgt attgttgaac aagggtttct 60

ctgtctgctt cttcactttc tctcgtttca atcgaaacca aaacaaaaac atgggcagaa 120

aattcttcgt cggtggcaac tggaaatgca atgggaccac tggggaggta aagaagattg 180

ttactacttt gaatgaggct aaagtccctg gagaagatgt cgtacaagtt gttgtgagcc 240

ctccttttgt gttccttcct gttgtaaaaa gtttgctgcg ccctgatttc catgtttcgg 300

<210> 1701
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 1701

agtacggctg cgagaagacg acagaagggg attgtagaac tgaacaaggg tttctctttc 60

tctttctctg tctgcttctt cactttctct cgtttcaatc gaaaaaaatc atgggcagaa 120

aattcttcgt cggtggcaac tggaaatgca atgggaccac tgaggaggtg aagaagattg 180

ttactacttt aaatgaagct aaagtccctg gagaagatgt tgtacaagtt gttg 234

<210> 1702
<211> 342
<212> nucleic acid
<213> Glycine max

<400> 1702

cccacgcgtc cgtacggctg cgagaagacg acagaagggg ggtcacacgc agttgtattg 60

tagaactgaa caagggtttc tctttctctt tctctgtctg cttcttcact ttctctcgtt 120

tcaatcgaaa aaaatcatgg gcagaaaatt cttcgtcggt ggcaactgga aatgcaatgg 180

gaccactgag gaggtgaaga agattgttac tactttaaat gaagctaaag tccctggaga 240

agatgttgta gaagttgttg tgagccctcc ttttgtgttc cttccttttg taaaaagttt 300

gctgcgccct gatttccatg tctccggcca aaattgttgg gt 342

<210> 1703
<211> 354
<212> nucleic acid
<213> Glycine max

<400> 1703

ctcgagccga atcggctcga gtgttgaaca agggtttctc tgtctgcttc ttcactttct 60

ctcgtttcaa tcgaaaccaa aacaaaaaca tgggcagaaa attcttcgtc ggtggcaact 120

ggaaatgcaa tgggaccact gaggaggtaa agaagattgt tactactttg aatgaggcta 180

aagtccctgg agaagatgtc gtagaagttg ttgtgagccc tccttttgtg ttccttcctg 240

ttgtaaaaag tttgctgcgc cctgatttcc atgtttcggc acaaaactgt tgggttcgca 300

aaggtggtgc ttataccggt gaggttagtg ctgaaatgct tgttaatttg ggaa 354

<210> 1704
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 1704

cccaggcgtc cgtacggctg cgagaggacg acagaagggg gcagttgtat tgttgaacaa 60

gggtttcgct gtctgcttct tcactttctc tcgtttcaat cgaaacgaaa acaaaaacat 120

gggcagaaaa ttcttcgtcg gtggcaactg gaaatgcaat gggaccactg aggaggtaaa 180

gaagattgtt acgactttga atgaggcgaa agtccctgga gaagatatcg tacaagttgt 240

tgtgagccct ccttttgtgt tccttcctgt gggtaaaagt ttgctgcgcc c 291

<210> 1705
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 1705

tgaacaaggg tttctctttc tctttctctg tctgcttctt cactttctct cgtttcaatc 60

gagggaaatc atgggcagaa aattcttcgt cggtggcaac tggaaatgca atgggaccac 120

tgatgaggtg aagaagattg ttactacttt aaatgaagct aaagtccctg gagaagatgt 180

tgtagaagtt gttgtgagca ctccttttgt gttccttccg tttgtaaaaa gtttgctgcg 240

ccctgatttc catgtctcgg cccaaaattg ttgggtacgc ataggtgatg cttagactgg 300

agaagttagt gc 312

<210> 1706
<211> 395
<212> nucleic acid
<213> Glycine max

<400> 1706

agtacggctg cgagaagacg acagaagggg atgagtttat agggaagaaa gctgcctatg 60

ctttgagcca aggtcttggg gtgattgcat gcattggaga attgttagaa gaaagggagg 120

ctggaaaaac ttttgatgtt tgttttcagc aattgaaggc ttatgcagac gcagttgcta 180

gttgggacaa cattgttatt gcatatgaac ctgtatgggc cattggaacg ggcaaagtgg 240

ccactcccca acaagctcag gaagtacatg tagctgttcg ggattggcta aaaaagaatg 300

tctcagatga agttgcgtct aaaacacgaa ttatttatgg agggtctgta aatggaggca 360

acagtgctga actggcaaag caagaagata ttgat 395

<210> 1707

<211> 403
<212> nucleic acid
<213> Glycine max

<400> 1707

agtacggctg cgagaagacg acagaagggg atgagtttat agggaagaaa gctgcctatg 60

ctttgagcca aggtcttggg gtgattgcat gcattggaga attgttagaa gaaagggagg 120

ctggaaaaac ttttgatgtt tgttttcagc aattgaaggc ttatgcagac gcagttgcta 180

gttgggacaa cattgttatt gcatatgaac ctgtatgggc cattggaacg ggcaaagtgg 240

ccactcccca acaagctcag gaagtacatg tagctgttcg ggattggcta aaaaagaatg 300

tctcagatga agttgcgtct aaaacacgaa ttatttatgg agggtctgta aatggaagca 360

acagtgctga actggcaaag caagaagata ttgatggatt tct 403

<210> 1708
<211> 254
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (22),(28),(40),(51),(63),(72)...(73),(78),(81),(85),
(99),(102)...(103),(164),(167),(215),(220),
(233)...(234),(239),(253)
<223> unsure at all n locations

<400> 1708

cttttcttct ctctcaacaa cntcaccngt cttcctcctn gatcatgtcc nacttcaagg 60

gcnagtacca tnntgagntg ntctnctatg ctgcgtacnt cnncactcct ggaaagggta 120

tttcttgctg ctgacgagtc aacagggaca acgggcaagc gttnggncag catcagagta 180

gagaacattg aatccaacag gcgagctctt agggngcagn ctttcactgc ccnngtgtnc 240

ttcaatatct cant 254

<210> 1709
<211> 283
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (50)

<223>

<400> 1709

tcacatgttc ctaatagcca ccatgtcttc cttcaagcgc acattctcan atgagttgat 60

tgccagtgct acttatattg gcaccccagg acttggtatg cttgcagctg atgagttaac 120

cggcacaatt gggaaacgtt tggcgagctt caacgtggag aatgttgaaa cgaacaggcg 180

cattcttcgt gagctcctat tcactgctcc cggttgtctt gagtgcctca gtggtgtcat 240

cttgtttgag gaaaccctct accaaatatc agctgcagga gta 283

<210> 1710
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1710

tcaagcctag cgtctctcaa ctcaacaatg ggtcttcttg acatcgtgca gccaggcgtc 60

ctcaacggtg ggacgtcat gaaggtgtac aaatatgctc aggagcacaa gtttgccatc 120

ccggccgtga acgtgacatc gtcgtcgacg acgaatgccg ctctgcaggc cgcccgcgac 180

atcaagtcgc ccatcatcat ccagacatca aatggcggcg ccgccttcta cgctggcaaa 240

ggtattgaca acaagaacca gaacgcct 268

<210> 1711
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1711

ggacgagaac atccccaagg cgcaaagcgc gttgctggtg aggtgcaagg cgaattctga 60

ggctactctt ggaacttaca agggggatgc cacgcttggg gaaggggctt ctgagtctct 120

tcatgttaag gattataagt actaagagag aggtgtgaga ttggttcttt tggaatggaa 180

ttgtttgttt ctttgggcct gttttggata ttcaagagtg tttttcaaaa aatttctact 240

gaaaaggaaa gaaattctcc a 261

<210> 1712
<211> 277
<212> nucleic acid

<213>   Glycine max

<220>
<221>   unsure
<222>   (2)...(3),(28),(90),(99),(103),(120),(128),(137),(145),
(164),(168),(173),(175),(186),(191),(196),(201),(205),
(208),(217),(224)...(225),(229)...(230),(238),(272)
<223>   unsure at all n locations

<400>   1712

cnnatctaca agggtaactc acagcttnct gatggtgcct cagagagcct ccatgtttcg   60

aactacagct actgatcaat cgaagttggn gttgtttgna ganactagtg cgagtaggan   120

tcggtatnat gggtacnaca accgnatttc ttgttgataa gtantatngt ggntngactc   180

ttcccngaat natcgnttgg nattnacngg atgtttncca gtgnncctnn atggccantt   240

agtcatccag ggtgttggtg aactggcaac cnggaag   277

<210>   1713
<211>   276
<212>   nucleic acid
<213>   Glycine max

<400>   1713

ctttaccagt cgacaacaga tggaaataaa tttgtggatt gcctccgcga tcagaacatt   60

gtgcccggca tcaaagttga taagggtctg gtccctctgc cagggtcaaa caatgagtct   120

tggtgccaag ggctggatgg ttggcttcta ggtctgctga atactacaag caaggtgctc   180

gatttgccaa gtggaggaca gttgttagca ttccatgtgg tccttctgca ttagctgtcc   240

cggaagcagc gtgggggctt gcacgttatg ctgcta   276

<210>   1714
<211>   256
<212>   nucleic acid
<213>   Glycine max

<220>
<221>   unsure
<222>   (83),(105),(107),(110)...(111),(131),(137),(143),(147),
(151),(158)
<223>   unsure at all n locations

<400>   1714

agttcccagt attaactgat catatactta catttggtga aggacagatt aaatttgaag   60

ataatgtgga tgaagtagtt tcncaaaatg gcccacgcga cgttngnggn nttctagaac 120

acacttcgtt ntgttcntct ctnttcntgg naagggtntt cttgctgctg atgagtcaac 180

agggacaatt ggcaagcgtt tgggcagcat cagtgtagag aacattgaat ccaacaggcg 240

atctcttagg gagctg 256

<210> 1715
<211> 191
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (53),(101)
<223> unsure at all n locations

<400> 1715

ggctttattt gccaggtgca atgcaaactc acatgcaact ttgggaactt acnaaggtga 60

tgctaccctt gctgagggtg cctccgagtc tctccatgtc naggactaca aatactaact 120

aaaggtgttg acttctttaa tttggagaat ttttgcacta ttggctacac cattctcatg 180

ttcttccttc a 191

<210> 1716
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1716

tgcaatgcaa gctcacatgc aactttggga acttgcaaag gtggtgctac ccttgctgag 60

ggtgcctctg agtctctcca tgtcaaggac tacaaatact aactaaaggt gttgacttct 120

tttaatttgg agaatttttg cgctattggc tacaccattc tcatgttctt tccttcgtag 180

aagttagact cggccgattt gctttctgct ctcggttata ggatgtctac ggattggggt 240

gtaatcgc 248

<210> 1717
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1717

acaccaaatt aacaaagcct tctttttctt gtgtgatctc acaagcccct aaaggccacc 60

atgtcttcct tcaagagcaa attccaagat gagttgattg ccaatgctag ttacattggc 120

accccaggaa agggtatcct tgcggctgac gagtcaacag ggacaattgg gaagcgtttg 180

gcgagcatca acgtggagaa tgttgaaaca aacaggcgca ttcttcgtga gctcctattc 240

actgcccctg gttgtcttga gcg 263

<210> 1718
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1718

cacaccaaat taacaaagcc ttctttttct tgtgtgatct cacaagcccc taaaggccac 60

catgtcttcc ttcaagagca aattccaaga tgagttgatt gccaatgcta gttacattgg 120

caccccagga aacggtatcc ttgcggctga cgagtcaaca gggacaattg ggaagcgttt 180

ggcgagcatc aacgtggaga atgttgaacc aaaaagggga atcctccgtg agctcctatt 240

cactgcccct ggttgtct 258

<210> 1719
<211> 337
<212> nucleic acid
<213> Glycine max

<400> 1719

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctcccg gtgctcttaa atatctcagt ggtgtcatcc tctttgagga aactctctac 300

cagagcacag ctgcaggcaa gccctttgtg gaagtct 337

<210> 1720
<211> 283
<212> nucleic acid

<213> Glycine max

<400> 1720

cctcgatcat gtctcacttc aagggcaagt accatgatga gcttatcgcc aatgctgcgt 60

acattggcac tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca 120

agcgtttggc cagcatcagt gtagagaaca ttgaatccaa caggcgagct cttagggagc 180

tgcttttcac tgctcctggt gttcttcaat atctcagtgg tgtcatcctc tttgaggaaa 240

ccctctacca gagcacagct gcaggcaagc cctttgtgaa tgt 283

<210> 1721
<211> 382
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (351),(366)
<223> unsure at all n locations

<400> 1721

ctcccaccaa cttcaccgtc ttcttcctcg atcatgtctc acttcaaggg caagtaccat 60

gatgagctta ttgccaatgc tgcttacatt ggcaattcct ggaaagggat tcttgctgct 120

gatgagtcaa cagggacaat tggcaagcgt ttggccagca tcagtgtaga gaatgttgaa 180

tccaacaggc gtgctcttag ggagctgctt ttcaccgctc ccggtgctct taaatatctc 240

agtggtgtca tcctctttga ggaaactctc taccagagca cagctgcagg caagcccttt 300

gtggaagtct tgaaggagct ggtgtgcttc tggcacaagg tgaccaaggc nagttgactt 360

ctggantaat ggagaaccac at 382

<210> 1722
<211> 314
<212> nucleic acid
<213> Glycine max

<400> 1722

aggagaatgg cctggttccc attgttgagc ctgagatcct tgttgatgga cctcatgaca 60

ttcacaagtg tgccgccgtc accgagcgtg tccttgcagc atgctacaag gctttgaatg 120

atcaccatgt ccttcttgag ggtaccctat tgaagccaaa catggtcacc cctggatccc 180

aatctgctaa ggtttcccct caggtggttg ccgagcacac tgtcagagcc cttcagagaa 240

ccgtgcctgc tgcagttcct gctgtcgttt tcttgtctgg tggccagagt gaggaggagg 300

catccgtcaa cctc 314

<210> 1723
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 1723

ctgcgtacat tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggacaa 60

ttggcaagcg tttggccagc atcagtgtag agaacattga atccaacagg cgagctctta 120

gggagctgct tttcactgct cctggtgttc ttcaatatct cagtggtgtc atcctctttg 180

aggaaaccct ctaccagagc acagctgcag gcaagccctt tgtgaatgtc ttgaaggaag 240

ctggtgtgct tcctggcatc aaggttgaca agggcacagt cgagcttg 288

<210> 1724
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 1724

ccatgatgag cttattgcca atgctgctta cattggcact cctggaaagg gtattcttgc 60

tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg tagagaatgt 120

tgaatccaac aggcgtgctc ttagggagct gcttttcacc gctcccggtg ctcttaaata 180

tctcagtggt gtcattctct ttgaggaaac tctctaccag agcacagctg caggcaagcc 240

ctttgtggaa gtcttgaagg aggctggtgt gcttcctgg 279

<210> 1725
<211> 288
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (188)
<223>

<400> 1725

gagaatgttg aatccaacag gcgtgctctt agggagctgc ttttcaccgc tcccggtgct 60

cttaaatatc tcagtggtgt catcctcttt gaggaaactc tctaccagag cacagctgca 120

ggcaagccct ttgtggaagt cttgaaggag gctggtgtgc ttcctggcat caaggttgac 180

aagggcanag ttgagcttgc tggcactaat ggagaaacca ccactcaggg tctagatggc 240

cttggtcagc gttgcgccaa gtactatgaa gccggtgcac gttttgcc 288

<210> 1726
<211> 319
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (70),(80),(166),(197),(215),(313)
<223> unsure at all n locations

<400> 1726

gaacgcctat ggcttgcgct agttacgctg tcatatgcca ggagaatggc ctggttccca 60

ttgttgagcn tgagatcctn gttgatggac ctcatgacat tcacaagtgt gccgccgtca 120

ccgagcgtgt ccttgcagca tgctacaagg ctttgaatga tcaccntgtc cttcttgagg 180

gtaccctatt gaagccnaac atggtcaccc ctggntccca atctgctaag gtttcccctc 240

aggtggttgc cgagcacact gtcagagccc ttcagagaac cgtgcctgct gcagttcctg 300

ctgtcgtttt ctngtctgg 319

<210> 1727
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 1727

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 60

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 120

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 180

tggtgttctt caatatctca gtggtgtcat cctctttgag gaaaccctct accagagaca 240

gctgcaggca agccctttgt gaatgtcttg aaggaa 276

<210> 1728
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1728

cgagctctta gggagctgct tttcactgct cctggtgttc ttcaatatct cagtggtgtc 60

atcctctttg aggaaaccct ctaccagagc acagctgcag gcaagccctt tgtgaatgtc 120

ttgaaggaag ctggtgtgct tcctggcatc aaggttgaca agggcacagt cgagcttgct 180

ggaactaatg gagaaaccac cactcagggt ctagatggcc ttggtcagcg ttgtgccaag 240

tactacgaag ctggtgcacg ttt 263

<210> 1729
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1729

tcaagggcaa gtaccatgat gagcttatcg ccaatgctgc gtacattggc actcctggaa 60

agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca 120

gtgtagagaa cattgaatcc aacaggcgag ctcttaggga gctgcttttc actgctcctg 180

gtgttcttca atatctcagt ggtgtcatcc tctttgagga aaccctctac cagagcacag 240

ctgcaggcaa gccctttgtg aatgtcttga aggaagctgg tgtgc 285

<210> 1730
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1730

gggtattctt gctgctgatg agtcaacagg gacaattggc aagcgtttgg ccagcatcag 60

tgtagagaat gttgaatcca acaggcgtgc tcttagggag ctgcttttca ccgctcccgg 120

tgctcttaaa tatctcagtg gtgtcatcct ctttgaggaa actctctacc agagcacagc 180

tgcaggcaag ccctttgtgg aagtcttgaa ggaggctggt gttcttcctg gcatcaaggt 240

tgacaagggc acagttgagc ttgctggcac taatggag 278

<210> 1731
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1731

ctcttaggga gctgcttttc actgctcctg gtgttcttca atatctcagt ggtgtcatcc 60

tctttgagga aaccctctac cagagcacag ctgcaggcaa gccctttgtg aatgtcttga 120

aggaagctgg tgtgcttcct ggcatcaagg ttgacaaggg cacagtcgag cttgctggaa 180

ctaatggaga aaccaccact cagggtctag atggccttgg tcagcgttgt gccaagtact 240

acgaagctgg tgcacgtttt gccaa 265

<210> 1732
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1732

cgatcatgtc tcacttcaag ggcaagtacc atgatgagct tattgccaat gctgcttaca 60

ttggcactcc tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc 120

gtttggccag catcagtgta gagaatgttg aatccaacag gcgtgctctt agggagctgc 180

ttttcaccgc tcccggtgct cttaaatatc tcagtggtgt catcctcttt gaggaaactc 240

tctaccagag cacagctgca ggca 264

<210> 1733
<211> 349
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (123)
<223>

<400> 1733

tctagatggc cttggtcagc gttgtgccaa gtgctacgaa gctggtgcac gttttgccaa 60

atggcgtgca gtgctgaaga ttggtcccaa cgagccatct gagctgtcta tccatgagaa 120

cgncctatgg cttggctaga tacgctgtca tatgccagga gaatggcctg gttcccattg 180

ttgagcctga gatccttgtt gatggacctc atgacattca caagtgtgcc gccgtcaccg 240

agcgtgtcct tgcagcatgc tacaaggctt gaatgatcac catgtccttc ttgagggtac 300

ctatgaagcc aaaccatggt caccctggat cccaatctgt aaggttccc 349

<210> 1734
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1734

tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca gtgtagagaa 60

tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc accgctcccg gtgctcttaa 120

atatctcagt ggtgtcatcc tctttgagga aactctctac cagagcacag ctgcaggcaa 180

gccctttgtg gaagtcttga aggaggctgg tgttcttcct ggcatcaagg ttgacaaggg 240

cacagttgag cttgctggca ctaatggaga aac 273

<210> 1735
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1735

atcatgtctc acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt 60

ggcactcctg gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt 120

ttggccagca tcagtgtaga gaacattgaa tccaacaggc gagctcttag ggagctgctt 180

ttcactgctc ctggtgttct tcaatattca gtggtgtcat cctctttgag gaaaccctct 240

accagagtac agctgcag 258

<210> 1736
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1736

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 60

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 120

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 180

tggtgttctt caatatctca gtggtgtcat cctctttgag gaaaccctct accagagcac 240

agctgcaggc aagccctttg tgaatgt 267

<210> 1737
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1737

ggcgagctct tagggagctg cttttcactg ctcctggtgt tcttcaatat ctcagtggtg 60

tcatcctctt tgaggaaacc ctctaccaga gcacagctgc aggcaagccc tttgtgaatg 120

tcttgaagga agctggtgtg cttcctggca tcaaggttga caagggcaca gtcgagcttg 180

ctggaactaa tggagaaacc accactcagg gtctagatgg ccttggtcag cgttgtgcca 240

agtactacga agctggtgc 259

<210> 1738
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1738

tgcgtacatt ggcactcctg gaaagggtat tcttgctgct gatgagtcaa cagggacaat 60

tggcaagcgt ttggccagca tcagtgtaga gaacattgaa tccaacaggc gagctcttag 120

ggagctgctt ttcactggtc ctggtgttct tcaatatctc agtggtgtca tcctctttga 180

ggaaaccctc taccagagca cagctgcagg caagcccttt gtgaatgtct tgaaggaagc 240

tggtgtgctt cctggcatca aggttgacaa 270

<210> 1739
<211> 357
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (42)...(43),(66)
<223> unsure at all n locations

<400> 1739

gtccaaccta cccctttttc ttctcccacc aacttcaccg tnntcttcct cgatcatgtc 60

tcactncaag ggcaagtacc atgatgagct tattgccaat gctgcttaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaatgttg aatccaacag gcgtgctctt agggagctgc ttttcaccgc 240

tcccggtgct cttaaatatc tcagtggtgt catcctcttt gaggaaatct ctaccagcac 300

agctgcaggc aagccctttg tggaatcttg aaggaggctg gtgtgcttcc tggcatc 357

<210> 1740
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1740

atcctctttg aggaaaccct ctaccagagc acagctgcag gcaagccctt tgtgaatgtc 60

ttgaaggaag ctggtgtgct tcctggcatc aaggttgaca agggcacagt cgagcttgct 120

ggaactaatg gagaaaccac cactcagggt ctagatggcc ttggtcagcg ttgtgccaag 180

tactacgaag ctggtgcacg ttttgccaaa tggcgtgcag tgctgaagat tggtcccaac 240

gagccatctg agctg 255

<210> 1741
<211> 292
<212> nucleic acid
<213> Glycine max

<400> 1741

atcctctttg aggaaaccct ctaccagagc acagctgcag gcaagccctt tgtgaatgtc 60

ttgaaggaag ctggtgtgct tcctggcatc aaggttgaca agggcacagt cgagcttgct 120

ggaactaatg gagaaaccac cactcagggt ctagatggcc ttggtcagcg ttgtgccaag 180

tactacgaag ctggtgcacg ttttgccaaa tggcgtgcag tgctgaagat tggtcccaac 240

gagccatctg agctgtctat cccatgagaa cgctatggct tggctagata cc 292

<210> 1742
<211> 292

<212>	nucleic acid
<213>	Glycine max

<220>
<221>	unsure
<222>	(19),(29),(291)
<223>	unsure at all n locations

<400>	1742

ctctttttct tctctctcna caacttcanc ttcttcctcc tcgatcatgt ctcacttcaa 60

gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc ctggaaaggg 120

tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca gcatcagtgt 180

agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt 240

tcttcaatat ctcagtggtg tcatcctctt tgaggaaacc ctctaccagg ng 292

<210>	1743
<211>	265
<212>	nucleic acid
<213>	Glycine max

<400>	1743

gtggttgccg agcacactgt cagagccctt cagagaaccg tgcctgccgc agttcctgct 60

gtcgttttct tgtctggtgg ccagagtgag gaggaggcat ctgtcaacct caacgccatt 120

aaccaggtca atgggaagaa gccatggtca ctctctttct cctttggaag ggcacttcaa 180

cagagcaccc ttaaggcatg ggcggaaaa gaagagaatg tgaagaaggc tcaggaagcc 240

cttttggtaa gagccaaggc taact 265

<210>	1744
<211>	262
<212>	nucleic acid
<213>	Glycine max

<400>	1744

tgcagatgag cttatcgcca atgctgcgta cattggcact cctggaaagg gtattcttgc 60

tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg tagagaacat 120

tgaatccaac aggcgagctc ttagggagct gcttttcact gctcctggtg ttcttcaata 180

tctcagtggt gtcatcctct ttgaggaaac cctctaccag agcacagctg caggcaagcc 240

ctttgtgaat gtcttgaagg aa 262

<210> 1745
<211> 266
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(104),(234)
<223> unsure at all n locations

<400> 1745

accatgatna gcttatcgcc aatgctgcgt acattggcac tcctggaaag ggtattcttg 60

ctgctgatga gtcaacaggg acaattggca agcgtttggc cagnatcagt gtagagaaca 120

ttgaatccaa caggcgagct cttagggagc tgcttttcac tgctcctggt gttcttcaat 180

atctcagtgg tgtcatcctc tttgaggaaa ccctctacca gaggacagct gcangcaagc 240

cctttgtgaa tgtcttgaag ggagct 266

<210> 1746
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 1746

ctggatccca atctgctaag gtttcccctc aggtggttgc cgagcacact gtcagagccc 60

ttcagagaac cgtgcctgct gcagttcctg ctgtcgtttt cttgtctggt ggccagagtg 120

aggaggaggc atccgtcaac ctcaacgcca ttaaccaggt caatgggaag aagccatggt 180

cactctcttt ctcctttgga agggcacttc aacagagcac ccttaaggca tggggcggaa 240

cagaagagaa tgtgaagaag gctcaggaag cccttt 276

<210> 1747
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1747

agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact cctggaaagg 60

gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg 120

tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact gctcctggtg 180

ttcttcaata tctcagtggt gtcatcctct ttgaggaaac cctctaccag agcacagctg 240

caggcaag 248

<210> 1748
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1748

ctctaaccta cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg 60

tctcacttca agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc 180

agcatcagtg tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact 240

gctcctcgtg ttcttcaata tctcagtggt gtcatcctct ttgaggaaac cctctaccag 300

<210> 1749
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 1749

gaacgcctat ggcttggcta gttacgctgt catatgccag gagaatggcc tggttcccat 60

tgttgagcct gagatccttg ttgatggacc tcatgacatt cacaagtgtg ccgccgtcac 120

cgagcgtgtc cttgcagcat gctacaaggc ttgaatgatc accatgtcct tcttgagggt 180

accctattga agccaaacat ggtcacccct ggatcccaat ctgctaaggt ttcccctcag 240

gtggttgccg agcacactgt cagagccctt cagagaaccg tgcctgc 287

<210> 1750
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 1750

ctttgaggaa accctctacc agagcacagc tgcaggcaag ccctttgtga atgtcttgaa 60

ggaagctggt gtgcttcctg gcatcaaggt tgacaagggc acagtcgagc ttgctggaac 120

taatggagaa accaccactc agggtctaga tggccttggt cagcgttgtg ccaagtacta 180

cgaagctggt gcacgttttg ccaaatggcg tgcagtgctg aagattggtc ccaacgagcc 240

atctgagctg tcta 254

<210> 1751
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1751

caacaacttc accttcttcc tcctcgatca tgtctcactt caagggcaag taccatgatg 60

agcttatcgc caatgctgcg tacattggca ctcctggaaa gggtattctt gctgctgatg 120

agtcaacagg gacaattggc aagcgtttgg ccagcatcag tgtagagaac attgaatcca 180

acaggcgagc tcttagggag ctgcttttca ctgctcctgg tgttcttcaa tatctcagtg 240

gtgtcatcct ctttgaggaa accctct 267

<210> 1752
<211> 261
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (250)
<223>

<400> 1752

cgatcatgtc tcacttcaag ggcaagtacc atgatgagct tattgtcaat gctgcttaca 60

ttggcactcc tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc 120

gtttggccag catcgtgtag agaatgttga atccaacagg cgtgctctta gggagctgct 180

tttcaccgct cccggtgctc ttaaatatct cagtggtgtc atcctctttg aggaaactct 240

ctaccagagn acagctgcag g 261

<210> 1753
<211> 267
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (242)
<223>

<400> 1753

gggaggaggc atccgtcaac ctcaacgcca ttaaccaggt caatgggaag aagccatggt 60

cactctcttt ctcctttgga agggcacttc aacagagcac ccttaaggca tggggcggaa 120

aagaagagaa tgtgaagaag gctcaggaag cccttttggt aagagccaag gctaactcag 180

aggcaactct gggaacctac aagggtaact cacagcttgc tgatggtgcc tcagagagcc 240

tncatgtttc gaactacagc tactgat 267

<210> 1754
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 1754

ggacaattgg caagcgtttg gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg 60

ctcttaggga gctgcttttc accgctcccg gtgctcttaa atatctcagt ggtgtcatcc 120

tctttgagga aactctctac cagagcacag ctgcaggcaa gccctttgtg gaagtcttga 180

aggaggctgg tgttcttcct ggcatcaagg ttgacaaggg cacagttgag cttgctggca 240

ctaatggaga aaccaccact 260

<210> 1755
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 1755

ctaacctacc tctttttctt ctctctcaac aacttcacct tcttcctcct cgatcatgtc 60

tcacttcaag ggcaagtacc atgatgagct tatcgccaat gctgcgtaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaacattg aatccaacag gcgagctctt agggagctgc ttttcactgc 240

tcctggtgtt cttcaatatc tcagtggtgt catcctcttt gaggaaacc 289

<210> 1756
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1756

ctcttaggga gctgcttttc acgactcctg gtgttcttca atatctacag tggtgtcatc 60

ctctttgagg aaaccctcta ccagagcaca gctgcaggca agccctttgt gaatgtcttg 120

aaggaagctg gtgtgcttcc tggcatcaag gttgacaagg gcacagtcga gcttgctgga 180

actaatggag aatccaccac tcagggtcta gatggccttg gtcagcgttg tgccaagtac 240

tacgaagctg gtgcacgttt tgcca 265

<210> 1757
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1757

tctcagtggt gtcatcctct ttgaggaaac cctctaccag agcacagctg caggcaagcc 60

ctttgtgaat gtcttgaagg aagctggtgt gcttcctggc atcaaggttg acaagggcac 120

agtcgagctt gctggaacta atggagaaac caccactcag ggtctagatg gccttggtca 180

gcgttctgcc aagtactacg aagctggtgc acgttttgcc aaatggcgtg cagtgctg 238

<210> 1758
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1758

tacctctttt tcttctctct caacaacttc accttcttcc tcctcgatca tgtctcactt 60

caagggcaag taccatgatg agcttatcgc caatgctgcg tacattggca ctcctggaaa 120

gggtattctt gctgctgatg agtcaacagg gacaattggc aagcgtttgg ccagcatcag 180

tgtagagaac attgaatcca acaggcgagc tcttagggag ctgcttttca ctgctcctgg 240

tgttcttcaa tatctcagtg gtgtcatcct ctttgaggaa 280

<210> 1759
<211> 256

<212>	nucleic acid
<213>	Glycine max

<400>	1759

ccagcatcag tgtagagaat gttgaatcca acaggcgtgc tcttagggag ctgcttttca 60

ccgctcccgg tgctcttaaa tatctcagtg gtgtcatcct ctttgaggaa actctctacc 120

agagcacagc tgcaggcaag ccctttgtgg aagtcttgaa ggaggctggt gtgcttcctg 180

gcatcaaggt tgacaagggc acagttgagc ttgctggcac taatggagaa accaccactc 240

agggtctaga tggctt 256

<210>	1760
<211>	274
<212>	nucleic acid
<213>	Glycine max

<400>	1760

tctttttctt ctctctcaac aacttcacct tcttcctcct cgatcatgtc tcacttcaag 60

ggcaagtacc atgatgagct tatcgccaat gctgcgtaca ttggcactcc tggaaagggt 120

attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag catcagtgta 180

gagaacattg aatccaacag gcgagctctt agggagctgc ttttcactgc tcctggtgtt 240

cttcaatatc tcagtggtgt catcctcttt gagg 274

<210>	1761
<211>	250
<212>	nucleic acid
<213>	Glycine max

<400>	1761

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 60

catcagtgta gagaatcttg aatccaacag gcgtgctctt agggagctgc ttttcaccgc 120

tcccggtgct cttaaatatc tcagtggtgt catcctcttt gaggaaactc tctaccagag 180

cacagctgca ggcaagccct ttgtggaagt cttgaaggag gctggtgttc ttcctggcat 240

caaggttgac 250

<210>	1762
<211>	256

<212> nucleic acid
<213> Glycine max

<400> 1762

ccatgatgag cttattgcca atgctgctta cattggcact cctggaaagg gtattcttgc 60

tgctgatgag tcaacaggga caattggcaa gcgtttgcca gcatcagtgt agagaatgtt 120

gaatccaaca ggcgtgctct tagggagctg cttttcaccg ctcccggtgc tcttaaatat 180

ctcagtggtg tcatcctctt tgaggaaact ctctaccaga gcacagctgc aggcaagccc 240

tttgtggaag tcttga 256

<210> 1763
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 1763

tctttttctt ctctctcaac aacttcacct tcttcctcct cgatcatgtc tcacttcaac 60

ggcaagtacc atgatgagct tatcgccaat gctgcgtaca ttggcactcc tggaaagggt 120

attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag catcagtgta 180

gagaacattg aatccaacag gcgagctctt aggggcgcgc ttttcactgc tcctggtgtt 240

cttcaatatc tcagtggtgt catcctcttt gatgaaccct ctaccagagc acagc 295

<210> 1764
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1764

ctcgagccgc ttcttcctcc tcgatcatgt ctcacttcaa gggcaagtac catgatgagc 60

tcatcgccaa tgctgcgtac attggcactc ctggaaaggg tattcttgct gctgatgagt 120

caacagggac aattggcaag cgtttggcca gcatcagtgt agagaacatt gaatccaaca 180

ggcgagctct tagggagctg cttttcactg ctcctggtgt tcttcaatat ctcagtggtg 240

tcatcctctt tgaggaaacc ctctaccag 269

<210> 1765
<211> 252

<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (38),(42),(55),(88),(111),(124),(165)
<223> unsure at all n locations

<400> 1765

ggcaagtaac atgatgagct tatcgccaat gctgcgtnca tnggcactcc tgganagggt 60

attcttgctg ctgatgagtc aacagggnca attggcaagc gtttggccag natcagtgta 120

gagnacattg aatccaacag gcgagctctt agggagctgc ttttnactgc tcctggtgtt 180

cttcaatatc tcagtggtgt catcctcttt gaggaaaccc tctaccagag cacagctgca 240

ggcaagccct tt 252

<210> 1766
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1766

ggaggaggca tccgtcaacc tcaacgccat taaccaggtc aatgggaaga agccatggtc 60

actctctttc tcctttggaa gggcacttca acagagcacc cttaaggcat ggggcggaaa 120

agaagagaat gtgaagaagg ctcaggaagc ccttttggta agagccaagg ctaactcaga 180

ggcaactctg ggaacctaca agggtaactc acagcttgct gatggtgcct cagagagcct 240

ccatgtttcg aactac 256

<210> 1767
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1767

ctcaggtggt tgccgagcac actgtcagag cccttcagag aaccgtgcct gctgcagttc 60

ctgctgtcgt tttcttgtct ggtggccaga gtgaggagga ggcatccgtc aacctcaacg 120

ccattaacca ggtcaatggg aagaagccat ggtcactctc tttctccttt ggaagggcac 180

ttcaacagag caccettaag gcatggggcg gaaaagaaga gaatgtgaag aaggctcagg 240

aagccctttt ggtaagagcc a 261

<210> 1768
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1768

attcacaagt gtgccgccgt caccgagcgt gtccttgcag catgctacaa ggctttgaat 60

gatcaccatg tccttcttga gggtacccta ttgaagccaa acatggtcac ccctggatcc 120

caatctgcta aggtttcccc tcaggtggtt gccgagcaca ctgtcagagc ccttcagaga 180

actgtgcctg ctgcagttcc tgctgtcgtt ttcttgtctg gtggccagag tgaggaggag 240

gcatccgtca acctcaacgc cattaacca 269

<210> 1769
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1769

acctacctct ttttcttctc tctcaacaac ttcaccttct tcctcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gctctcctgt 120

gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtaga gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc 240

ctggtgttct tcaatatctc agtggtgtca tcctctttga ggaaacctct acca 294

<210> 1770
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1770

tgaatccaac aggcgagctc ttagggagct gcttttcact gctcctggtg ttcttcaata 60

tctcagtggt gtcatcctct ttgaggaaac cctctaccag agcacagctg caggcaagcc 120

ctttgtgaat gtcttgaagg aagctggtgt gcttcctggc atcaaggttg acaagggcac 180

agtcgagctt gctggaacta atggagaaac caggactcag ggtctagatg gccttggtca 240

gcgttgtg 248

<210> 1771
<211> 267
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (24)
<223>

<400> 1771

tggatctcat gacattcaca agtntgctgc cgtcaccgag cgtgtccttg cagcatgcta 60

caaggctttg aatgatcacc acgtccttct tgagggtacc ctattgaagc caaacatggt 120

cacccccgga tccaattctg ctaaggtttc ccctcaggtg gttgcggagc acactgttag 180

agcccttcag agaaccgtgc ctgctgcagt tcctgctatc gttttcttgt ctggtgggca 240

gagtgaggag gaggcatccg ttaacct 267

<210> 1772
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1772

ctctaaccta cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg 60

tctcacttca agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc 180

agcatcagtg tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact 240

gctcctggtg ttcttcaata tctcagtggt gtcatcctct ttgag 285

<210> 1773
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 1773

ctgttagagc ccttcagaga accgtgcctg ctgcagttcc tgctatcgtt ttcttgtctg 60

gtgggcagag tgaggaggag gcatccgtta acctcaatgc cattaaccag gtcaatggaa 120

agaagccatg gtcactctct ttctcctttg gaagggcact tcaacagagc acccttaagg 180

catggagtgg aaaagaggag aatgtgaaga aggctcagga agccctttttg gtaagagcca 240

aggccaactc agaggcaact ctgggaa 267

<210> 1774
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 1774

tctaacctac ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt 60

ctcacttcaa gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc 120

ctggaaaggg tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca 180

gcatcagtgt agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg 240

ctcctggtgt tcttcaatat ctcagtggtg tcatcctctt tgagg 285

<210> 1775
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 1775

ctaacctacc tctttttctt ctctctcaac aacttcacct tcttcctcct cgatcatgtc 60

tcacttcaag ggcaagtacc atgatgagct tatcgccaat gctgcgtaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaacattg aatccaacag gcgagctctt agggagctgc ttttcactgc 240

tcctggtgtt cttcaatatc tcagtggtgt catcctcttt gagg 284

<210> 1776
<211> 261
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (46)
<223>

<400> 1776

cagagaaccg tgcctgctgc agttcctgct atcgttttct tgtctngtgg gcagagtgag 60

gaggaggcat ccgttaacct caatgccatt aaccaggtca atggaaagaa gccatggtca 120

ctctctttct cctttggaag ggcacttcaa cagagcaccc ttaaggcatg gagtggaaaa 180

gaggagaatg tgaagaaggc tcaggaagcc cttttggtaa gagccaaggc taactcagag 240

gcaactctgg gaactacaag g 261

<210> 1777
<211> 274
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (6),(8),(80),(142)
<223> unsure at all n locations

<400> 1777

tgcctncngc agttcctgct atcgttttct tgtctggtgg gcagagtgag gaggaggcat 60

ccgttaacct caatgccatn aaccaggtca atggaaagaa gccatggtca ctctctttct 120

cctttggaag ggcacttcaa gnagcaccct taaggcatgg agtggaaaag aggagaatgt 180

gaagaaggct caggaagccc ttttggtaag agccaaggcc aactcagagg caactctggg 240

aacctacaag ggtaactcaa agcttgctga tggt 274

<210> 1778
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1778

gtctcacttc aagggcaagt accatgatga gcttatcgcc aatgctgcgt acattggcac 60

tcctggaacc ggtattcttg ctgctgatga gtcaacaggg acaattggca agcgtttggc 120

cagcatcagt gtagagaaca ttgaatccaa caggcgagct cttagggagc tgcttttcac 180

tgctcctggt gttcttcaat atctcagtgg tgtcatcctc tttgaggaaa ccctctacca 240

gagcacag 248

<210> 1779
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1779

aacctacctc tttttcttct ctctcaacaa cttcaccttc ttcctcctcg atcatgtctc 60

acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg 120

gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtaga gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc 240

ctggtgttct tcaatatctc agtggtgtca tcctcttt 278

<210> 1780
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 1780

ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt ctcacttcaa 60

gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc ctggaaaggg 120

tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca gcatcagtgt 180

agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt 240

tcttcaatat ctcagtggtg tcatcctctt t 271

<210> 1781
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1781

ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt ctcacttcaa 60

gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc ctggaaaggg 120

tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca gcatcagtgt 180

atagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt 240

tcttcaatat ctcagtggtg tcatcctctt tga 273

<210> 1782
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1782

gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt tcttcaatag 60

gtcagtggtg tcatcctctt tgaggtaacc ctctaccaga gcacagctgc aggcaagccc 120

tttgtgaatg tcttgaagga agctggtgtg cttcctggca tcaaggttga caagggcaca 180

gtcgagcttg ctggaactaa tggagaaacc accactcagg gtctagatgg ccttggtc 238

<210> 1783
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1783

aacagggaca attggcaagc gtttggccag catcagtgta gagaatgttg aatccaacag 60

gtgtgctctt agggagctgc ttttcaccgc tcccggtgct cttaaatatc tcagtggtgt 120

catcctcttt gaggaaactc tctaccagag cacagctgca ggcaagccct ttgtggaagt 180

cttgaaggag gctggtgtgc ttcctggcat caaggttgac aagggcacag ttgagcttgc 240

tggcactaat ggagaaac 258

<210> 1784
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 1784

attgaagcca aacatggtca cccctggatc ccaatctgct aaggtttccc ctcaggtggt 60

tgccgagcac actgtcagag cccttcagag aaccgtgcct gctgcagttc ctgctgtcgt 120

tttcttgtct ggtggccaga gtgaggagga ggcatccgtc aacctcaacg ccattaacca 180

ggtcaatggg aagaagccat ggtcactctc tttctccttt ggaagggcac ttcaacagag 240

cacccttaag gcatggg 257

<210> 1785
<211> 272

<212> nucleic acid
<213> Glycine max

<400> 1785

cgagaaccgt gcctgctgca gttcctgcta tcgttttctt gtctggtggg cagagtgagg 60

aggaggcatc cgttaacctc aatgccatta accaggtcaa tggaaagaag ccatggtcac 120

tctctttctc ctttggaagg gcacttcaac agagcaccct taaggcatgg agtggaaaag 180

aggagaatgt gaagaaggct caggaagccc ttttggtaag agccaaggcc aactcagagg 240

caactctggg aactacaagg gtaatcaaag ct 272

<210> 1786
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1786

ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt ctcacttcaa 60

gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc ctggaaaggg 120

tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca gcatcagtgt 180

agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt 240

tcttcaatat ctcagtggtg tcatcctctt tga 273

<210> 1787
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 1787

tgacattcac aagtgtgctg ccgtcaccga gcgtgtcctt gcagcatgct acaaggcttt 60

gaatgatcac cacgtccttc ttgagggtac cctattgaag ccaaacatgg tcaccccccgg 120

atccaattct gctaggtttc ccctcaggtg gttgcggaga cactgttaga gcccttcaga 180

gaaccgtgcc tgctgcagtt cctgctatcg ttttcttgtc tggtgggcag agtgaggagg 240

aggcatccgt taacctcaat gccattaacc 270

<210> 1788
<211> 284

<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (53),(73),(76),(228),(256),(266)
<223> unsure at all n locations

<400> 1788

gtgcctgctg cagttcctgc tatcgttttc ttgtctggtg ggcagagtga ggnggaggca 60

tccgttaacc ctnaangcca ttaaccaggt caatggaaag aagccatggt cactctcttt 120

ctcctttgga agggcacttc aacagagcac ccttaaggca tggagtggaa aagaggagaa 180

tgtgaagaag gctcaggaag ccctttggt aagagccaag gccaactnag aggcaactct 240

gggaacctac aagggnaatc aaagcntgct gatggtgcct caga 284

<210> 1789
<211> 268
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (184)...(185)
<223> unsure at all n locations

<400> 1789

cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat cagtgtagag 60

aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc tggtgttctt 120

caatatctca gtggtgtcat cctctttgag gaaaccctct accagagcac agctgcagga 180

cagnnctttg tgaatgtctt gaaggaagct ggtgtgcttc ctggcatcaa ggttgacaag 240

ggcacagtcg agcttgctgg aactaatg 268

<210> 1790
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 1790

ggttgacgga tgcctcctcc tcaacgccat taaccaggtc aatgggaaga agccatggtc 60

actctctttc tcctttggaa gggcacttca acagagcacc cttaaggcat ggggcggaaa 120

agaagagaat gtgaagaagg ctcaggaagc ccttttggta agagccaagg ctaactcaga 180

ggcaactctg ggaacctaca agggtaactc acagcttgct gatggtgcct cagagagcct 240

ccatgtttcg aactacagct 260

<210> 1791
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1791

caacctaccc ctttttcttc tcccaccaac ttcaccgtct tcttcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat tgtcaatgct gcttacattg gcactcctgg 120

aaagggtatt cttgctgctg atgagtcaac agggacaatt gcaagcgttt ggccagcatc 180

agtgtagaga atgttgaatc caacaggcgt gctcttaggg agctgctttt caccgctccc 240

ggtgctctta aatatctcag tggt 264

<210> 1792
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 1792

ctctctcaac aacttcacct tcttcctcct cgatcatgtc ttacttcaag ggcaagtacc 60

atgatgagct tatcgccaat gctgcgtaca ttggcactcc tggaaagggt attcttgctg 120

ctgatgagtc aacagggaca attggcaagc gtttggccag catcagtgta gagaacattg 180

aatccaacag gcgagctctt agggagctgc ttttcactgc tcctggtgtt cttcaatatc 240

tcagtggtgt catcctcttt 260

<210> 1793
<211> 251
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (32),(87),(109)
<223> unsure at all n locations

<400> 1793

ggaggaggca tccgtcaacc tcaacgccat tnaccaggtc aatgggaaga agccatggtc 60

actctctttc tcctttggaa gggcacntca acagagcacc cttaaggcnt ggggcggaaa 120

agaagagaat gtgaagaagg ctcaggaagc ccttttggta agagccaagg ctaactcaga 180

ggcaactctg ggaacctaca agggtaactc acagcttgct gatggtgcct cagagagcct 240

ccatgtttcg a 251

<210> 1794
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1794

ctctcaagtc caacctaccc ctttttcttc tcccaccaac ttcaccgtct tcttcctcga 60

tcatgtctca cttcaagggc aagtaccatg atgagcttat tgtcaatgct gcttacattg 120

gcactcctgg aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt 180

tggccagcat cagtgtagag aatgttgaat ccaacaggcg tgctcttagg gagctgcttt 240

tcaccgctcc cggtgctctt aaatatctca gtggtgtcat cctctt 286

<210> 1795
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1795

gaatgcctat ggcttggcca gatacgctgt catatgccag gagaatggcc tggttcccat 60

tgttgagcct gagatccttg ttgatggatc tcatgacatt cacaagtgtg ctgccgtcac 120

cgagcgtgtc cttgcagcat gctacaaggc tttgaatgat caccacgtcc ttcttgaggg 180

taccctattg aagccaaaca tggtcacccc cggatccaat tctgctaagg tttcccctca 240

ggtggttgcg g 251

<210> 1796
<211> 294
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2),(32),(56)...(57)
<223> unsure at all n locations

<400> 1796

cnaacctctc aagtccaacc taccccttt tnttctccca ccaacttcac cgttcnnttc 60

ctcgatcatg tctcacttca agggcaagta ccatgatgag cttattgtca atgctgctta 120

cattggcact cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa 180

gcgtttggcc agcatcagtg tagagaatgt tgaatccaac aggcgtgctc ttagggagct 240

gcttttcacc gctcccggtg ctcttaaata tctcagtggt gtcatcctct ttga 294

<210> 1797
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 1797

tcggcattcg gctcgatctc aagtccaacc taccccttt tcttctccca ccaacttcac 60

cgtcttcttc ctcgatcatg tctcacttca agggcaagta ccatgatgag cttattgcca 120

atgctgctta cattggcact cctggaaagg gtattcttgc tgctgatgag tcaacaggga 180

caattggcaa gcgtttggcc agcatcagtg tagagaatgt tgaatccaac aggcgtgctc 240

ttagggagct gcttttcacc gctcccggtg ctcttaaata tctcagtggt gtcatcctct 300

<210> 1798
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1798

tgacgacaga aggggttgcc gagcacactg tcagagccct tcagagaacc gtgcctgctg 60

cagttcctgc tgtcgttttc ttgtctggtg gccagagtga ggaggatgca tccgtcaacc 120

tcaacgccat taaccaggtc aatgggaaga agccatggtc actctctttc tcctttggaa 180

gggcacttca acagagcacc cttaaggcat ggggcggaaa agaagagaat gtgaagaagg 240

ctcaggaagc ccttttggta agagccaagg ctaactcaga ggcaactctg ggaa 294

<210> 1799
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 1799

ctcacttcaa gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc 60

ctggaaaggg tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca 120

gcatcagtgt agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg 180

ctcctggtgt tcttcaatat ctcagtggtg tcatcctctt tgaggaaacc ctctaccaga 240

gc 242

<210> 1800
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1800

cacctacccc tttttcttct cccaccaact tcaccgtctt cttcctcgat catgtctcac 60

ttcaagggca agtaccatga tgagcttatt gccaatgctg cttacattgg cactcctgga 120

aagggtattc ttgctgctga tgagtcaaca gggacaattg gcaagcgttt ggccagcatc 180

agtgtagaga atgttgaatc caacaggcgt gctcttaggg agctgctttt caccgctccc 240

ggtgctctta catatctcag tggtgtcat 269

<210> 1801
<211> 230
<212> nucleic acid
<213> Glycine max

<400> 1801

ctcaggtggt tgccgagcac actgtcagag cccttcagag aaccgtgcct gctgcagttc 60

ctgctgtcgt tttcttgtct ggtggccaga gtgaggagga ggcatccgtc aacctcaacg 120

ccattaacca ggtcaatggg aagaagccat ggtcactctc tttctccttt ggaagggcac 180

ttcaacagag cacccttaag gcatggggcg gaaaagaaga gaatgtgaag 230

<210> 1802
<211> 246

<212> nucleic acid
<213> Glycine max

<400> 1802

atacgctgtc atatgccagg agaatggcct ggttcccatt gttgagcctg agatccttgt 60

tgatggacct catgacattc acaagtgtgc cgccgtcacc gagcgtgtcc ttgcagcatg 120

ctacaaggct ttgaatgatc accatgtcct tcttgagggt accctattga agccatacat 180

ggtcacccct ggatcccaat ctgctaaggt ttcccctcag gtggttgccg agcacactgt 240

cagagc 246

<210> 1803
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1803

ctacaaggct ttgaatgatc accatgtcct tcttgagggt accctattga agccaaacat 60

ggtcacccct ggatcccaat ctgctaaggt ttcccctcag gtggttgccg agcacactgt 120

cagagccctt cagagaaccg tgcctgctgc agttcctgct gtcgttttct tgtctggtgg 180

ccagagtgag gaggaggcat ccgtcaacct caacgccatt aaccaggtca atgggaagaa 240

gccatggtca ctctctttct cc 262

<210> 1804
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1804

tctctcaaca acttcacctt cttcctcctc gatcatgtct cacttcaagg gcaagtacca 60

tgatgagctt atcgccaatg ctgcgtacat tggcactcct ggaaagggta ttcttgctgc 120

tgatgagtca acagggacaa ttggcaagcg ttggccagca tcagtgtaga gcccattgaa 180

tccaacaggc gagctcttag ggagctgctt ttcactgctc ctggtgttct tcaatatctc 240

agtggtgtca tcctctttga ggaaaccctc taccagagca 280

<210> 1805
<211> 294

<212> nucleic acid
<213> Glycine max

<400> 1805

caacctctca agtccaacct acccctttt cttctcccac caacttcacc gtcttcttcc 60

tcgatcatgt ctcacttcaa gggcaagtac catgatgagc ttattgccaa tgctgcttac 120

attggcactc ctggaaaggg tattcttgct gctgtgagtc aacaggaca attggcaagc 180

gtttggccag catcagtgta gagaatgttg aatccaacag gcgtgctctt agggagctgc 240

ttttcaccgc tcccggtgct cttaaatatc tcagtggtgt catcctcttt gagg 294

<210> 1806
<211> 290
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (63)
<223>

<400> 1806

tctaacctac ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt 60

ctncacttcc aagggcaagt accatgatga gcttatcgcc aatgctgcgt acattggcac 120

tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca agcgtttggc 180

cagcatcagt gtagagaaca ttgaatccaa caggcgagct cttagggagc tgcttttcac 240

tgctcctggt gttcttcaat atctcagtgg tgtcatcctc tttgaggaaa 290

<210> 1807
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1807

acctacctct ttttcttctc tctcaacaac ttcaccttct tcctcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 120

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 180

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 240

tggtgttctt caatatctca gtggtg 266

<210> 1808
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1808

ctgagctggc tatccatgag aatgcctatg gcttggccag atacgctgtc atatgccagg 60

agaatggcct ggttcccatt gttgagcctg agatccttgt tgatggatct catgacattc 120

acaagtgtgc tgccgtcacc gagcgtgtcc ttgcagcatg ctacaaggct ttgaatgatc 180

accacgtcct tcttgagggt accctattga agccaaacat ggtcaccccc ggatccaatt 240

ctgctaaggt ttcccctc 258

<210> 1809
<211> 279
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (141)
<223>

<400> 1809

aacctctaac ctacctcttt ttcttctctc tcaacaactt caccttcttc ctcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttatcg ccaatgctgc gtacattggc 120

actcctggaa agggtattct ngctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa cattgaatcc aacaggcgag ctcttaggga gctgcttttc 240

actgctcctg gtgttcttca atatctcagt ggtgtcatc 279

<210> 1810
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 1810

attgaagcca aacatggtca cccctggatc ccaatctgct aaggtttccc ctcaggtggt 60

tgccgagcac actgtcagag cccttcagag aaccgtgcct gctgcagttc ctgctgtcgt 120

tttcttgtct ggtggccaga gtgaggagga ggcatccgtc aacctcaacg ccattaacca 180

ggtcaatggg aagaagccat ggtcactctc tttctccttt ggaagggcac ttcaacagag 240

cacc 244

<210> 1811
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1811

cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg tctcacttca 60

agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact cctggaaagg 120

gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg 180

tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact gctcctggtg 240

ttcttcaata tctcagtggt gtca 264

<210> 1812
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1812

aacctacctc tttttcttct ctctcaacaa cttcaccttc ttcctcctcg atcatgtctc 60

acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg 120

gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtaga gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc 240

ctggtgttct tcaatatctc agtggtgtc 269

<210> 1813
<211> 268
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (35)
<223>

<400> 1813

cctctttttc ttctctctca acaacttcac cttcntcctc ctcgatcatg tctcacttca 60

agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact cctggaaagg 120

gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg 180

tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact gctcctggtg 240

ttcttcaata tctcagtggt gtcatcct 268

<210> 1814
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 1814

aacctacctc tttttcttct ctctcaacaa cttcaccttc ttcctcctcg atcatgtctc 60

acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg 120

gaaagcgtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtaga gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc 240

ctggtgttct tcaatatctc agtggtgtca t 271

<210> 1815
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1815

gatcaccatg tccttcttga gggtacccta ttgaagccaa acatggtcac ccctggatcc 60

caatctgcta aggtttcccc tcaggtggtt gccgagcaca ctgtcagagc ccttcagaga 120

accgtgcctg ctgcagttcc tgctgtcgtt ttcttgtctg gtggccagag tgaggaggag 180

gcatccgtca acctcaacgc cattaaccag gtcaatggga agaagccatg gtcactctct 240

ttctcctttg gaagggcact tcaac 265

<210> 1816
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1816

ctgctcctgg tgttcttcaa tatctcagtt ctgtcatcct ctttgaggaa accctctacc 60

agagcacagc tgcaggcaag ccctttgtga atgtcttgaa ggaagctggt gtgcttcctg 120

gcatcaaggt tgacaagggc acagtcgagc ttgctggaac taatggagaa accaccactc 180

agggtctaga tggccttggt cagcgttgtg ccaagtacta cgaagctggt gcacgttttg 240

ccaaatggcg t 251

<210> 1817
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1817

gctcgaagcg caattggaca agcgtttggc cagcatcagt gtagagaaca ttgaatccaa 60

caggcgagct cttagggagc tgcttttcac tgctcctggt gttcttcaat atctcagtgg 120

tgtcatcctc tttgaggaaa ccctctacca gagcacagct gcaggcaagc cctttgtgaa 180

tgtcttgaag gaagctggtg tgcttcctgg catcaaggtt gacaagggca cagtcgagct 240

tgctggaact aatggagaaa ccacc 265

<210> 1818
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1818

tctcgagccg attcggctcg aggtgcctgc tgcagttcct gctgacgttt tcttgtctgg 60

aggccagagt gaggaggaga catccgtcaa cctcaacgcc attaaccagg tcaatgggaa 120

gaagccatgg tcactctctt tctcctttgg aagggcactt caacagagca cccttaaggc 180

atggggcgga aaagaagaga atgtgaagaa tgctcaggaa gcccttttgg taagagccaa 240

ggctaactca gaggcaactc tggg 264

<210> 1819
<211> 247
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (108)
<223>

<400> 1819

ctctcaacaa cttcaccttc ttcctcctcg atcatgtctc acttcaaggg caagtaccat 60

gatgagctta tcgccaatgc tgcgtacatt ggcactcctg gaaagggnat tcttgctgct 120

gatgagtcaa cagggacaat tggcaagcgt ttggccagca tcagtgtaga gaacattgaa 180

tccaacaggc gagctcttag ggagctgctt ttcactgctc ctggtgttct tcaatatctc 240

agtggtg 247

<210> 1820
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 1820

attgaagcca aacatggtca cccctggatc ccaatctgct aaggtttccc ctcaggtggt 60

tgccgagcac actgtcagag cccttcagag aaccgtgcct gctgcagttc ctgctgtcgt 120

tttcttgtct ggtggccaga gtgaggagga ggcatccgtc aacctcaacg ccattaacca 180

ggtcaatggg aagaagccat ggtcactctc tttctccttt ggaagggcac ttcaacagag 240

c 241

<210> 1821
<211> 267
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (250)
<223>

<400> 1821

aacctacctc tttttcttct ctctcaacaa cttcaccttc ttcctcctcg atcatgtctc 60

acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg 120

gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtaga gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc 240

ctggtgttcn tcaatatctc agtggtg 267

<210> 1822
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1822

gtccaaccta cccctttttc ttctcccacc aacttcaccg tcttcttcct cgatcatgtc 60

tcacttcaag ggcaagtacc atgatgagct tattgccaat gctgcttaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaatgttg aatccaacag gcgtgctctt agggagctgc ttttcaccgc 240

tcccggtgct cttaaatatc tcagtggt 268

<210> 1823
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1823

taacctacct ctttttcttc tctctcaaca acttcacctt cttcctcctc gatcatgtct 60

cacttcaagg gcaagtacca tgatgagctt atcgccaatg ctgcgtacat tggcactcct 120

ggaaagggta ttcttgctgc tgatgagtca acagggacaa ttggcaagcg tttggccagc 180

atcagtgtag agaacattga atccaacagg cgagctctta gggagctgct tttcactgct 240

cctggtgttc ttcaatatct cagtgg 266

<210> 1824
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1824

ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt ctcacttcaa 60

gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc ctggaaaggg 120

tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca gcatcagtgt 180

agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt 240

tcttcaatat ctcagtggt 259

<210> 1825
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1825

tcaacaactt caccttcttc ctcctcgatc atgtctcact tcaagggcaa gtaccatgat 60

gagcttatcg ccaatgctgc gtacattggc actcctggaa agggtattct tgctgctgat 120

gagtcaacag ggacaattgg caagcgtttg gccagcatca gtgtagagaa cattgaatcc 180

aacaggcgag ctcttaggga gctgcttttc actgctcctg gtgttcttca atatctcagt 240

ggtgtcatc 249

<210> 1826
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1826

cgaagctggt gcacgttttg ccaaatggcg tgcagtgctg aagattggtc ccaacgagcc 60

atctgagctg tctatccatg agaacgccta tggcttggct agatacgctg tcatatgcca 120

ggagaatggc ctggttccca ttgttgagcc tgagatcctt gttgatggac ctcatgacat 180

tcacaagtgt gccgccgtca ccgagcgtgt ccttgcagca tgctacaagg ctttgaatga 240

tcaccatgtc cttcttgagg gtaccctatt ga 272

<210> 1827
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1827

gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc ctggtgttct 60

tcaatatctc agtggtgtca tcctctttga ggaaaccctc taccagagca cagctgcagg 120

caagcccttg tgaatgtctt gaaggaagct ggtgtgcttc ctggcatcaa ggttgacaag 180

ggcacagtcg agcttgctgg aactaatgga gacaccacca ctcagggtct agcatggctt 240

agtcagcgtt gtg 253

<210> 1828
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1828

ctacctcttt ttcttctctc tcaacaactt caccttcttc ctcctcgatc atgtctcact 60

tcaagggcaa gtaccatgat gagcttatcg ccaatgctgc gtacattggc actcctggaa 120

agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca 180

gtgtagagaa cattgaatcc aacaggcgag ctcttaggga gctgcttttc actgctcctg 240

gtgttcttca atatctca 258

<210> 1829
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1829

gccaggagaa tggcctggtt cccattgttg agcctgaggt ccttgttgat ggacctcgtg 60

acattcacaa gtgtgccgcc gtcaccgagc gtgtccttgc agcatgctac aaggctttgg 120

gtgatcaccg tgtccttctt gagggtaccc tattgaagcc aaacatggtc acccctggat 180

cccagtctgc taaggtttcc cctcaggtgg ttgccgagca cactgtcaga gcccttcaga 240

gaaccgtg 248

<210> 1830
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 1830

attgaagcca aacatggtca cccctggatc ccaatctgct aaggtttccc ctcaggtggt 60

tgccgagcac actgtcagag cccttcagag aaccgtgcct gctgcagttc ctgctgtcgt 120

tttcttgtct ggtggccaga gtgaggagga ggcatccgtc aacctcaacg ccattaacca 180

ggtcaatggg aagaagccat ggtcactctc tttctccttt ggaagggcac ttcaaca 237

<210> 1831
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 1831

cttgagggta cctattgaag ccaaacatgg tcaccccccgg atccaattct gctaaggttt 60

cccctcaggt ggttgcggac acactgttag agcccttcag agaaccgtgc ctgctgcagt 120

tcctgctatc gttttcttgt ctggtgggca gagtgaggag gaggcatccg ttaacctcaa 180

tgccattaac caggtcaatg gaaagaagcc atggtcactc tctttctcct ttggaagggc 240

acttcaac 248

<210> 1832
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 1832

agtcggatct agctgcttac attggcactc ctggaaaggg tattcttgct gctgatgagt 60

caacagggac aattggcaag cgtttggcca gcatcagtgt agagaatgtt gaatccaaca 120

ggcgtgctct tagggagctg cttttcaccg ctcccggtgc tcttaaatat ctcagtggtg 180

tcatcctctt tgaggaaact ctctaccaga gtacagctgc aggcaacccc tttgtggaac 240

tcttgaagga gg 252

<210> 1833
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1833

ctaacctacc tctttttctt ctctctcaac aacttcacct tcttcctcct cgatcatgtc 60

tcacttcaag ggcaagtacc atgatgagct tatcgccaat gctgcgtaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaacattg aatccaacag gcgagctctt agggagctgc ttttcactgc 240

tcctggtgtt cttcaatatc tcag 264

<210> 1834
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1834

gccgtcaccg agcgtgtcct tgcagcatgc tacaaggctt tgaatgatca ccatgtcctt 60

cttgagggta ccctattgaa gccaaacatg gtcacccctg gatcccaatc tgctaaggtt 120

tcccctcagg tggttgccga gcacactgtc agagcccttc agagaaccgt gcctgctgca 180

gttcctgctg tcgttttctt gtctggtggc cagagtgagg aggaggcatc cgtcaacctc 240

aacgccatta acc 253

<210> 1835
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1835

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc 120

actcctggaa agggtattct tctgctgatg agtcaacagg gacaattggc aagcgtttgg 180

ccagcatcag tgtagagaat gttgaatcca acaggcgtgc tcttagggag ctgcttttca 240

ccgctcccgg tgctcttaaa tatctcagtg gtgtcatcct 280

<210> 1836
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1836

ctttttcttc tctctcaaca acttcacctt cttcctcctc gatcatgtct cacttcaagg 60

gcaagtacca tgatgagctt atcgccaatg ctgcgtacat tggcactcct ggaaagggta 120

ttcttgctgc tgatgagtca acagggacaa ttggcaagcg tttggccagc atcagtgtag 180

agaacattga atccaacagg cgagctctta gggagctgct tttcactgct cctggtgttc 240

ttcaatatct cagtggtg 258

<210> 1837
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 1837

acttcacctt cttcctcctc gatcatgtct cacttcaagg gcaagtacca tgatgagctt 60

atcgccaatg ctgcgtacat tggcactcct ggaaagggta ttcttgctgc tgatgagtca 120

acagggacaa ttggcaagcg tttggccagc atcagtgtag agaacattga atccaacagg 180

cgagctctta gggagctgct tttcactgct cctggtgttc ttcaatatct cagtggtgtc 240

at 242

<210> 1838
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 1838

cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg tctcacttca 60

agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact cctggaaagg 120

gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg 180

tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact gctcctggtg 240

ttcttcaata tc 252

<210> 1839
<211> 272
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (13),(35),(93),(231),(246)
<223> unsure at all n locations

<400> 1839

acctacctct ttntcttctc tctcaacaac ttcancttct tcctcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgncaatgct gcgtacattg gcactcctgg 120

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 180

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt ncactgctcc 240

tggtgntctt caatatctca ggtgtcatcc tc 272

<210> 1840
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 1840

atcaccatgt ccttcttgag ggtaccctat tgaagccaaa catggtcacc cctggatccc 60

aatctgctaa ggtttcccct caggtggttg ccgagcacac tgtcagagcc cttcagagaa 120

ccgtgcctgc tgcagttcct gctgtcgttt tcttgtctgg tggccagagt gaggaggagg 180

catccgtcaa cctcaacgcc attaaccagg tcaatgggaa gaagccatgg tcactctctt 240

tctcct 246

<210> 1841
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 1841

ctctttttct tctctctcaa caacttcacc ttcttcctcc tcgatcatgt ctcacttcaa 60

gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc ctggaaaggg 120

tattcttgct gctgatgagt caacagggac aattggcaag cgtttggcca gcatcagtgt 180

agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg ctcctggtgt 240

tcttcaatat ct 252

<210> 1842
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1842

ctttttcttc tctctcaaca acttcacctt cttcctactc gatcatgtct cacttcaagg 60

gcaagtacca tgatgagctt attgccaatg ctgcgtacat tggcactcct ggaaagggta 120

ttcttgctgc tgatgagtca acagggacaa ttggcaagcg tttggccagc atcagtgtag 180

agaacattga atccaacagg cgagctctta gggagctgct tttcactgct cctggtgttc 240

ttcaatatct c 251

<210> 1843
<211> 266
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(26),(81),(99),(133),(144),(180),(191),(225)
<223> unsure at all n locations

<400> 1843

cccttttttnt tctcccacca acttcnccgt cttcttcctc gatcatgtct cacttaaagg 60

gcaagtacca tgatgagctt nttgccaatg ctgcttacnt tggcactcct ggaaagggta 120

ttcttgctgc tgntgagtca acanggacaa ttggcaagcg tttggccagc atcagtgtan 180

agaatgttga ntccaacagg cgtgctctta gggagctgct tttcnccgct cccggtgctc 240

ttaaatatct cagtggtgtc atcctc 266

<210> 1844
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1844

ctttttcttc tctctcaaca acttcacctt cttcctcctc gatcatgtct cacttcaagg 60

gcaagtacca tgatgagctt atcgccaatg ctgcgtacat tggcactcct ggaaagggta 120

ttcttgctgc tgatgagtca acagggacaa ttggcaagcg tttggccagc atcagtgtag 180

agaacattga atccagcagg cgagctctta gggagctgct tttcactgct cctggtgttc 240

attcatatct cagggtgt 258

<210> 1845
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1845

caagtccaac ctacccccttt ttcttctccc accaacttca ccgtcttctt cctcgatcat 60

gtctcacttc aagggcaagt accatgatga gcttattgtc aatgctgctt acattggcac 120

tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca agcgtttggc 180

cagcatcagt gtagagaatg ttgaatccaa caggcgtgct cttagggagc tgcttttcac 240

cgctcccggt gctcttaaat atctc 265

<210> 1846
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 1846

ttccaacctc tcaagtccaa cctacccctt tttcttctcc caccaacttc accgtcttct 60

tcctcgatca tgtctcactt caagggcaag taccatgatg agcttattgc caatgctgct 120

tacattggca ctcctggaaa gggtttcttg ctgctgatga gtcaacaggg acaattggca 180

agcgtttggc cagcatcagt gtagagaatg ttgaatccaa caggcgtgct cttagggagc 240

tgcttttcac cgctcccggt gctcttaaat atctcagt 278

<210> 1847
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 1847

tcaagtccaa cctacccctt tttcttctcc caccaacttc accgtcttct tcctcgatca 60

tgtctcactt caagggcaag taccatgatg agcttattgt caatgctgct tacattggca 120

ctcctggatc agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctcccg gtgctcttaa atatctcagt ggtgtca 277

<210> 1848
<211> 224
<212> nucleic acid
<213> Glycine max

<400> 1848

cgggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca 60

gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc accgctcccg 120

gtgctcttaa atatctcagt ggtgtcatcc tctttgagga aactctctac cagagcacag 180

ctgcaggcaa gccctttctg gaagtcttga aggaggctgg tgtg 224

<210> 1849
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1849

ctttttcttc tcccaccaac ttcaccgtct tcttcctcga tcatgtctca cttcaagggc 60

aagtaccatg atgagcttat tgccaatgct gcttacattg gcactcctgg aaagggtatt 120

cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat cagtgtagag 180

aatgttgaat ccaacaggcg tgctcttagg gagctgcttt tcaccgctcc cggtgctc 238

<210> 1850
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1850

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgatac ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctcccg gtgctcttaa atatc 265

<210> 1851
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 1851

acctacctct ttttcttctc tctcaacaac ttcaccttct tcctcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 120

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 180

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 240

tggtgttctt caatattcag tggtgtcatc c 271

<210> 1852
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1852

gtcaccgagc gtgtccttgc agcatgctac aaggctttga atgatcacca tgtccttctt 60

gagggtaccc tattgaagcc aaacatggtc accctggatc ccaatctgct aaggtttccc 120

ctcaggtggt tgcgagcaca ctgtcagagc ccttcagaga accgtgcctg ctgcagttcc 180

tgctgtcgtt ttcttgtctg gtggccagag tgaggaggag gcatccgtca acctcaacgc 240

cattaaccag tcaatgggaa g 261

<210> 1853
<211> 261
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (54)
<223>

<400> 1853

caacctctca agtccaacct accccttttt cttctcccac caacttcacc gtcntcttcc 60

tcgatcatgt ctcacttcaa gggcaagtac catgatgagc ttattgccaa tgctgcttac 120

attggcactc ctggaaaggg tattcttgct gctgatgagt caacagggac aattggcaag 180

cgtttggcca gcatcagtgt agagaatgtt gaatccaaca ggcgtgctct tagggagctg 240

cttttcaccg ctcccggtgc t 261

<210> 1854
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1854

ctctctcaac aacttcacct tcttcctcct cgatcatgtc tcacttcaag ggcaagtacc 60

atgatgagct tatcgccaat gctgcgtaca ttggcactcc tggaaagggt attcttgctg 120

ctgatgagtc aacagggaca attggcaagc gtttggccag catcagtgta gagaatattg 180

aatccaacag gcgagctctt agggagctgc ttttcactgc tcctggtctt cttcaatatc 240

<210> 1855
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 1855

gagtcaacag ggacaattgg caagcgtttg gccagcatca gtgtagagaa cattgaatcc 60

aacaggcgag ctcttaggga gctgcttttc actgctcctg gtgttcttca atatctcagt 120

ggtgtcatcc tctttgagga aaccctctac cagaggacag ctgcaggcaa gccctttgtg 180

aatgtcttga aggaagctgg tgtgcttcct ggcatcaagg ttgacaaggg caca 234

<210> 1856
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1856

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctcccg gtgctcttaa a 261

<210> 1857
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 1857

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcatc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctcccg gtgctcttaa 260

<210> 1858
<211> 242
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (112),(192)
<223> unsure at all n locations

<400> 1858

cgtcaccgag cgtgtccttg cagcatgcta caaggctttg aatgatcacc atgtccttct 60

tgagggtacc ctattgaagc caaacatggt cacccctgga tcccaatctg cnaaggtttc 120

ccctcaggtg gttgccgagc acactgtcag agcccttcag agaaccgtgc ctgctgcagt 180

tcctgctgtc gntttcttgt ctggtggcca gagtgaggag gaggcatccg tcaacctcaa 240

cg 242

<210> 1859
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1859

cctacctctt tttcttctct ctcaacaact tcaccttctt cctcctcgat tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 120

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 180

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 240

tggtgttctt caatatctca gtggtg 266

<210> 1860
<211> 260
<212> nucleic acid

<213>   Glycine max

<400>   1860

ctttcttctc tctcaacaac ttcaccttcc tcctcctcga tcatgtctca cttcaacggc   60

aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg aaagggtact 120

cttgctgctg atgagcaaca gggacaattg gcaagcgttt ggccagcatc agtgtagaga 180

accttgaatc caacaggcga gctcttaggg agctgctttt cactgctcct ggtgttcttc 240

aatatctcag tggtgtcatc   260

<210>   1861
<211>   264
<212>   nucleic acid
<213>   Glycine max

<400>   1861

ctctaaccta cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg   60

tctcacttca agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg gtattttgct gctgatgagt caacagggac aattggcaag cgtttggcca 180

gcatcagtgt agagaacatt gaatccaaca ggcgagctct tagggagctg cttttcactg 240

ctcctggtgt tcttcaatat ctca   264

<210>   1862
<211>   256
<212>   nucleic acid
<213>   Glycine max

<400>   1862

gtccaaccta cccctttttc ttctcccacc aacttcaccg tagacttcct cgatcatgtc   60

tcacttcaag ggcaagtacc atgatgagct tattgccaat gctgcttaca ttggcactcc 120

tggaaagggt attcctgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaatgttg aatccaacag gcgtgctctt agggagctgc ttttcaccgc 240

tcccggtgct cttaaa   256

<210>   1863
<211>   256
<212>   nucleic acid

<213>	Glycine max

<400>	1863

cctacctctt tttcttctct ctcaacaact tcaccttctt cctcctcgat catgtctcac	60

ttcaagggca agtaccatga tgagcttatc gccaatgctg cgtacattgg cactcctgga	120

aagggtattc ttctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca	180

gtgtagagaa cattgaatcc aacaggcgag ctcttaggga gctgcttttc actgctcctg	240

gtgttcttca atatct	256

<210>	1864
<211>	247
<212>	nucleic acid
<213>	Glycine max

<400>	1864

ccgtcaccga gcgtgtcctt gcagcatgct acaaggcttt gaatgatcac cacgtccttc	60

ttgagggtac cctattgaag ccaaacatgg tcacccccgg atccaattct gctaaggttt	120

cccctcaggt ggttgcggag acactgttag agcccttcag agaaccgtgc ctgctgcagt	180

tcctgctatc gttttcttgt ctggtgggca gagtgaggag gaggcatccg ttaacctcaa	240

tgccatt	247

<210>	1865
<211>	256
<212>	nucleic acid
<213>	Glycine max

<400>	1865

gctgtgtttt taattgatgg atttgcttgc agatccgctt atcgccaatg ctgcgtacat	60

tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggacaa ttggcaagcg	120

tttggccagc atcagtgtag agaacattga atccaacagg cgagctctta gggagctgct	180

tttcactgct cctggtgttc ttcaatatct catggtgtca tcctctttga ggaaaccctc	240

taccagagca cagctg	256

<210>	1866
<211>	266
<212>	nucleic acid

<213> Glycine max

<400> 1866

gaagggcact tcaacagagc acccttaagg catggagtgg aaaagaggag aatgtgaaga 60

aggctcagga agcccttttg gtaagagcca aggccaactc agaggcaact ctgggaacct 120

acaagggtaa ctcaaagctt gctgatggtg cctcagagag cctccatgtt gaggactaca 180

agtactgatc aatctaagtg cgggtaggaa tcggtatttt atgggtacaa ccgaattttc 240

ttgttaatga gtattgtgct tcgact 266

<210> 1867
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 1867

ctctaaccta cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg 60

tctcacttca agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc 180

agcatcagtg tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact 240

gctcctg 247

<210> 1868
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45),(57)
<223> unsure at all n locations

<400> 1868

ctacctcttt ttcttctctc tcaacaactt caccttcttc ctccncgatc atgtctncac 60

ttcaagggca agtaccatga tgagcttatc gccaatgctg cgtacattgg cactcctgga 120

aagggtattc ttgctgctga tgagtcaaca gggacaattg gcaagcgttt ggccagcatc 180

agtgtagaga acattgaatc caacaggcga gctcttaggg agctgctttt cactgctcct 240

ggtgttcttc aatatctcag tggt 264

<210> 1869
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1869

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctaccg gtgctcttaa atatctcag 269

<210> 1870
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 1870

cctcgagctc gattcggctc gagggccaag taccatgatg agcttacgcg ccaatgctgc 60

gaccattggc actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg 120

ctcgcgtttg gccagcatca gtgtagagaa cattgaatcc aacaggcgag ctcttaggga 180

gctgcttttc actgctcctg gtgttcttca atatctcagt ggtgtcatcc tctttgagga 240

aaccctctac 250

<210> 1871
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1871

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atctcacttc aagggcaagt accatgatga gcttattgcc aatgctgctt acattggcac 120

tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca agcgtttggc 180

cagcatcagt gtagagaatg ttgaatccaa caggcgtgct cttagggagc tgcttttcac 240

cgctcccggt gctcttaaa 259

<210> 1872
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 1872

ccaacctacc ccttttctt ctcccaccaa cttcaccgtc atcttcctcg atcatgtctc 60

acttcaaggg caagtaccat gatgagctta ttgccaatgc tgcttacatt ggcactcctg 120

gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtaga gaatgttgaa tccaacaggc gtgctcttag ggagctgctt atcaccgctc 240

ccggtgctc 249

<210> 1873
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 1873

ctcaagtcca acctacccct tttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg tcaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtatg 180

gctcgcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

acc 243

<210> 1874
<211> 254
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (41),(46),(95),(115),(117),(167),(194),(202),(215)
<223> unsure at all n locations

<400> 1874

acctctcaag tccaacctac cccttttct tctcccacca ncttcnccgt cttcttcctc 60

gatcatgtct cacttcaagg gcaagtacca tgatnagctt attgccaatg ctgcntncat 120

tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggncaa ttggcaagcg 180

tttggccagc atcngtgtag anaatgttga atccnacagg cgtgctctta gggagctgct 240

tttcaccgct cccg 254

<210> 1875
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 1875

aacctacctc tttttcttct ctctcaacaa cttcacctac ttcctcctcg atcatgtctc 60

acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg 120

gaaagggcat tcttgctgct gaggagtcaa cagggacaat tggcaagcgt ttggccagca 180

tcagtgtcga gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc 240

ctggtgttcc cc 252

<210> 1876
<211> 294
<212> nucleic acid
<213> Glycine max

<400> 1876

caacctctca agtccaacct accccttttt cttctcccac caacttcacc gtcttcttcc 60

tcgattcatg tctcacttca aggggcaagt accatgatga gcttattgcc aatgctgctt 120

acattggcac tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca 180

agcgtttggc cagcatcagt gtagagaatg ttgaatccaa caggcgtgct cttagggagc 240

tgcttttcac cgctcccggt gctcttaaat atctcagtgg tgtcaacctc ttga 294

<210> 1877
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 1877

tcaagtatta acccttttct ctctgaatac tctctactca atacattggc actcctggaa 60

agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca 120

gtgtagagaa cattgaatcc aacaggcgag ctcttaggga gctgcttttc actgctcctg 180

gtgttcttca atatctcagt ggtgtcatcc tctttgagga aaccctctac cagagcacag 240

ctgc 244

<210> 1878
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 1878

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcctc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg tcaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accg 244

<210> 1879
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 1879

ccaacctctc aagtccaacc taccccttt tcttctccca ccaacttcac cgtcttcttc 60

ctcgatcatg tctcacttca agggcaagta ccatgatgag cttattgtca atgctgctta 120

cattggcact ctggaaaggg tattcttgct gctgatgagt caacagggac aattggcaag 180

cgtttggcca gcatcagtgt agagaatgtt gaatccaaca ggcgtgctct tagggagctg 240

cttttcaccg ctcccggtg 259

<210> 1880
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 1880

gtccaaccta ccccttttc ttctcccacc aacttcaccg tcttcttcct cgatcatgtc 60

tcacttcaag ggcaagtacc atgatgagct tattgccaat gctgcttaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaatgttg aatccaacag gcgtgctctt agggagctgc ttttcaccgc 240

tcccggtgct cttaaata 258

<210> 1881
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1881

tctcgagccg attcggctcg aggtgcctgc tgcagttcct gctgacgttt tcttgtctgg 60

tggccagagt gaggaggagg acatccgtca acctcaacgc cattaaccag gtcaatggga 120

agaagccatg gtcactctct ttctcctttg gaagggcact tcaacagagc acccttaagg 180

catggggcgg aaaagaagag aatgtgaaga aggctcagga agcccttttg gtaagagcca 240

aggctaactc agaggcaact ctgggaac 268

<210> 1882
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1882

cttttcttct ctctcaacaa cttcaccttc gtccacctcg atcatgtctc acttcaaggg 60

caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg gaaagggtat 120

tcttgctgct atgagtcaac agggacaatt ggcaagcgtt tggccagcat cagtgtagag 180

aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc tggtgttctt 240

caatatctca g 251

<210> 1883
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 1883

caggtgagtt cttagggagc tgcttttcac tgctcctggt gttcttcaat atctcagtgg 60

tgtcatcctc tttgaggaaa ccctctacca gagcacagct gcaggcaagc cctttgtgaa 120

tgtcttgaag gaagctggtg tgcttcctgg catcaaggtt gacaagggca cagtcgagct 180

tgctggaact aatggagaaa ccaccactca gggtctagat ggccttggtc agcgttgtg 239

<210> 1884
<211> 261
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (39),(62),(67)
<223> unsure at all n locations

<400> 1884

ctaacctacc tctttttctt ttctctcaac aacttcacnt tcttcctcct cgatcatgtc 60

tnacttncaa gggcaagtac catgatgagc ttatcgccaa tgctgcgtac attggcactc 120

ctggaaaggg tattcttgtg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta gagaacattg aatccaacag gcgagctctt agggagctgc ttttcactgc 240

tcctggtgtt cttcaatatc t 261

<210> 1885
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 1885

ccaacctctc aagtccaacc taccccttttt tcttctccca ccaacttcac cgtcctcttc 60

ctcgatcatg tctcacttca agggcaagta ccatgatgag cttattgcca atgctgctta 120

cattggcact cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa 180

gcgtttggcc agcatcagtg tagagaatgt tgaatccaac aggcgtgctc ttagggagc 239

<210> 1886
<211> 256
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (65),(68)
<223> unsure at all n locations

<400> 1886

ctttcttcca acctctcaag tccacactac cccttttttct tctcccacca acttcaccga 60

tcacntcntc gatcatgtct cacttcaagg gcaagtacca tgatgagctt attgtcaatg 120

ctgcttacat tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggacaa 180

ttggcaagcg tttggccagc atcagtgtag agaatgttga atccaacagg cgtgctctta 240

gggagctgct tttcac 256

<210> 1887
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1887

acctacctct ttttcttctc tctcaacaac ttcaccttct tcctcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 120

acagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 180

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 240

tggtgttctt caatatctca gtgg 264

<210> 1888
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1888

ctaacctacc tctttttctt ctctctcaac aacttcacct tcttcctcct cgatcatgtc 60

tcacttcaag ggcaagtacc atgatgagct tatcgccaat gctgcgtaca ttggcactcc 120

tggaaagggt attttgctgc tgatgagtca acagggacaa ttggcaagcg tttggccagc 180

atcagtgtag agaacattga atccaacagg cgagctctta gggagctgct tttcactgct 240

cctggtgttc ttcaa 255

<210> 1889
<211> 254
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45)
<223>

<400> 1889

ctttcttcca acctctcaag tccaacctac cccttttct tctcncacca acttcaccgt 60

cttcttcctc gatcatgtct cacttcaagg gcaagtacca tgatgagctt attgccaatg 120

ctgcttacat tgcactcctg gaaagggtat tcttgctgct gatgagtcaa cagggacaat 180

tggcaagcgt ttggccagca tcagtgtaga gaatgttgaa tccaacaggc gtgctcttag 240

ggagctgctt ttca 254

<210> 1890
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1890

cctacctctt tttcttctct ctcaacaact tcaccttctt cctcctcgat catgtctcac 60

ttcaagggca agtaccatga tgagcttatc gccaatgctg cgtacattgg cactcctgga 120

aagggtattc ttgctgctga tgagtcaaca gggacaattg gcaagcgttt ggccagcatc 180

agtgtagaga acattgaatc caacaggcga gctcttaggg agctgctttt cactgctcct 240

ggtgttcttc aatat 255

<210> 1891
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1891

cctcgagccg aatcggctcg agcacttcaa gggcaagtac catgacgagc ttattgtcaa 60

acctgcttac attggcactc ctggaaaggg tattcttgct gctgatgagt caacagggac 120

aattggcaag cgtttggcca gcatcagtgt agagaatgtt gaatccaaca ggcgtgctct 180

tagggagctg cttttcaccg ctcccggtgc tcttaaatat ctcagtggtg tcatcctc 238

<210> 1892
<211> 271

<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (251),(264)...(265)
<223> unsure at all n locations

<400> 1892

ggcctggttc ccattgttga gcctgagatc cttgttgatg gacctcatga cattcacaag 60

tgtgccgccg tcaccgagcg tgtccttgca gcatgctaca aggctttgaa tgatcaccat 120

gtccttcttg agggtaccct attgaagcca aacatggtca cccctggatc ccaatctgct 180

aaggtttccc ctcaggtggt tgccgagcaa atgtcagagc cttcagagaa cggtgcctgc 240

tgcagtcctg ngtcgttttc tggnnggggg g 271

<210> 1893
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 1893

ctctaaccta cctctttttc ttctctctca acaacttcac cttctacctc ctcgatcatg 60

tctcacttca agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc 180

agcatcagtg tagagaacat cgaatccaac aggcgagctc ttagggagct gcttttcact 240

gctcctggtg ttcttcaata tctcagtact gtcatcctct ttg 283

<210> 1894
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1894

tttcttccaa cctctcaagt ccaacctacc ccttttttctt ctcccaccaa cttcaccgtc 60

actcttcctc gatcatgtct cacttcaagg gcaagtacca tgatgagctt attgccaatg 120

ctgcttacat tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggacaa 180

ccggcaagcg tttggccagc atcagtgtag agaatgttga atccaacagg cgtgctctta 240

gggagctgct ttt 253

<210> 1895
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 1895

ctttcttcca acctctcaag tccatcctac cccttttct tctcccacca acttcaccgt 60

acacttcctc gatcatgtct cacttcaagg gcaagtacca tgatgagctt attgccaatg 120

ctgcttacat tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggacaa 180

ttggcaagcg tttggccagc atcagtgtag agaatgttga atccaacagg cgtgctctta 240

gg 242

<210> 1896
<211> 257
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (18),(53)
<223> unsure at all n locations

<400> 1896

ctctaaccta cctctttntc ttctctctca acaacttcac cttcttcctc ctncgatcat 60

gtctccactt caagggcaag taccatgatg agcttatcgc caatgctgcg tacattggca 120

ctcctggaaa gggtattctt gctgctgatg agtcaacagg gacaattggc aagcgtttgg 180

ccagcatcag tgtagagaac attgaatcca acaggcgagc tcttagggag ctgcttttca 240

ctgctcctgg tgttctt 257

<210> 1897
<211> 248
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (28)
<223>

<400> 1897

cttccaacct ctcaagtcca acctaccnct ttttcttctc ccaccaactt caccgtcctt 60

cttcctcgat catgtctcac ttcaagggca agtaccatga tgagcttatt gccaatgctg 120

cttacattgg cactcctgga aagggtattc ttgctgctga tgagtcaaca gggacaattg 180

gcaagcgttt ggccagcatc agtgtagaga atgttgaatc caacaggcgt gctctaggga 240

gctgcttt 248

<210> 1898
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 1898

cttctctctc aacaacttca ccttcttcct cctcgatcat gtctcacttc aagggcaagt 60

accatgatga gcttatcgcc aatgctgcgt acattggcac tcctggaaag ggtattcttg 120

ctgctgatga gtcaacaggg acaattggca agcgtttggc cagcatcagt gtagagaaca 180

ttgaatccaa caggcgagct cttagggagc tgcttttcac tgctcctggt gttcttcaat 240

atc 243

<210> 1899
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1899

gccattaacc aggtcaatgg aaagaagcca tggtcactct ctttctcctt tggaagggca 60

cttcaacaga gcacccttaa ggcatggagt ggaaaagagg agaatgtgaa gaaggctcag 120

gaagcccttt tggtaagagc caaggccaac tcagaggcaa ctctgggaac ctacaagggt 180

aacttcaaag cttgctgatg gtgcctcaga gagcctccag ttgaggacta caattactga 240

ttcaatctaa gtgcgggtag gaatcggt 268

<210> 1900
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 1900

tgctgatgag tcaacaggga caattggcaa gcgtttggcc agcatcagtg tagagaatgt 60

tgaatccaac aggcgtgctc ttagggagct gcttttcacc gctcccggtg ctcgtaaata 120

tctcagtggt gtcatcctct ttaaggaaac tctctaccag agcacagctg caggcaagcc 180

ctttgtggaa gtcttgaatg aggctggtgt tcttcctggc atcaaggttt acagggcaca 240

gtttcgcttg ctg 253

<210> 1901
<211> 228
<212> nucleic acid
<213> Glycine max

<400> 1901

cggctcgagg gtcacccccg gatccaattc tgctaaggtt tcccctcagg tggttgcgga 60

gacactgtta gagcccttca gagaaccgtg cctgctgcag ttcctgctat cgttttcttg 120

tctggtgggc agagtgagga ggaggcatcc gttaacctca atgccattaa ccaggtcaat 180

ggaaagaagc catggtcact ctctttctcc tttggaaggg cacttcaa 228

<210> 1902
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 1902

caacttcacc gtcttcttcc tcgatcatgt ctcacttcaa gggcaagtac catgatgagc 60

ttattgccaa tgctgcttac attggcactc ctggaaaggg tattcttgct gctgatgagt 120

caacagggac aattggcaag cgtttggcca gcatcagtgt agagaatgtt gaatccaaca 180

ggcgtgctct tagggagctg cttttcaccg ctcccggtgc tcttaaatat ctcagtggtg 240

tcatcctctt tg 252

<210> 1903
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 1903

tttcttccaa cctctcaagt ccaacctacc ccttttctt ctcccaccaa cttcaccgtc 60

tacttcctcg atcatgtctc acttcaaggg caagtaccat gatgagctta ttgccaatgc 120

tgcttacttg gcactcctgg aaagggtatt cttgctgctg atgagtcaac agggacaatt 180

ggcaagcgtt tggccagcat cagtgtagag aatgttgaat ccaacaggcg tgctcttagg 240

gagct 245

<210> 1904
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 1904

atcatgtctc acttcaaggg caagtaccat gatgagctta tcgccaatgc tgcgtacatt 60

ggcactcctg gaaagggtat tcttgctgct gatgagtcaa cagggacaat tggcaagcgt 120

atgccagcat cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt 180

tcactgctcc gggtgttctt caatatctca gtggtgtcat cctctttgag gaaaccctct 240

accagagcac agctg 255

<210> 1905
<211> 233
<212> nucleic acid
<213> Glycine max

<400> 1905

caacctctca agtccaacct accccttttt cttctcccac caacttcacc gtcttcttcc 60

tcgatcatgt ctcacttcaa gggcaagtac catgatgagc ttattgccaa tgctgcttac 120

attggcactc ctggaaaggg tattcttgct gctgatgagt caacagggac aattggcaag 180

cgtttagcca gcatcagtgt agagaatgtt gaatccaaca ggcgtgctct tag 233

<210> 1906
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 1906

ctttttcttc tctctcaaca acttcacctt cttcctcctc gcatccgtct cacttcaagg 60

gcaagtacca tgatgagctt atcgccaatg ctgcgtacat tggcactcct ggaaagggta 120

ttcttgaagc tgatgagtca acagggacaa ttggcaagcg tttggccagc atcagtgtag 180

agaacattga atccaacagg cgagctctta gggagctgct tttcactgct cctggtg 237

<210> 1907
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 1907

tctcgagccg attcggctcg agctaaccta cctctttttc ttctctcgca acaacttcac 60

ctacttcctc ctcgatcatg tcacacttca agggcaagta ccatgatgag cttatcgcca 120

atgctgcgta cattggcact cctggaaagg gtattcttgc tgctgatgag tcaacaggga 180

caattggcaa gcgtttggcc agcatcagtg tagagaacat tgaatccaac aggcgag 237

<210> 1908
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 1908

ctcctttgga agggcacttc aacagagcac ccttaaggca tggggcggaa aataagagaa 60

tgtgaagaag gctcaggaag ccccttttggt aagagccaag gctaactcag aggcaactct 120

gggaccctac aagggtaact cacagcttgc tgatggtgcc tcagagagcc tccatgtttc 180

gaactacagc tactgatcaa tcgaagttgg tgttgtttga agagactagt gcgagtagga 240

atc 243

<210> 1909
<211> 249
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45),(51),(62),(73),(121)...(122)
<223> unsure at all n locations

<400> 1909

ctttcttcca acctctcaag tccaacctac ccctttttct tctcncacca ncttcaccgt 60

cntcttcctc gancatgtct cacttcaagg gcaagtacca tgtgagctta ttgccaatgc 120

nncttacatt ggcactcctg gaaagggtat tcttgctgct gatgagtcaa cagggacaat 180

tggcaagcgt ttggccagca tcagtgtaga gaatgaatcc aacaggcgtg ctcttaggga 240

gctgctttt 249

<210> 1910
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 1910

cctctaacct acctctttag cttctctctc aacaacttca ccttcttcct cctcgatcat 60

gtctcacttc aagggcaagt accatgatga gcttatcgcc aatgctgcgt acattggcac 120

tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca agcgtttggc 180

cagcatcagt gtagagaaca ttcaatccaa caggcgagct tagggagctg cttttcactg 240

ct 242

<210> 1911
<211> 248
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2),(44),(65),(82)...(83),(107),(221)
<223> unsure at all n locations

<400> 1911

cnttggaagg gcacttcaac agagcaccct taaggcatgg gacngaaaag aagagaatgt 60

gaagnaggct caggaagccc tnntggtaag agccaaggct aactcanagg caactctggg 120

aacctacaag ggtaactcac agcttgctga tggtgcctca gagagcctcc atgtttcgaa 180

ctaagctact gatcaatcga agttggtgtt gtttgaagag nctagtgcga gtaggaatcg 240

gtattatg 248

<210> 1912
<211> 243
<212> nucleic acid

<213>	Glycine max

<400>	1912

ctcctttgga agggcacttc aacagagcac ccttaaggca tgaggcggaa aagaagagaa	60

tgtgaagaag gctcaggaag ccctttttggt aagagccaag gctaactcag aggcaactct	120

gggaacctac aagggtaact cacagcttgc tgatggtgcc tcagagagcc tccatgtttc	180

gaactacagc tattgtcaat cgagttgggg gtggtttaag agacctagtt cgagtaggaa	240

tcg	243

<210>	1913
<211>	261
<212>	nucleic acid
<213>	Glycine max

<400>	1913

gaagaaggct caggaagccc ttttggtaag agccaaggcc aactcagagg caactctggg	60

aacctacaag ggtaactcaa agcttgctga tggtgcctca gagagcctcc atgttgagga	120

ctacaagtac tgatcaatct aagtgcgggt aggaatcggt attttatggg tacaaccgaa	180

ttttcttgtt aatgagtatt gtgcttcgac tcttcccaga ataataatcg tttggaattt	240

tgctttttgt ttttcctagt g	261

<210>	1914
<211>	253
<212>	nucleic acid
<213>	Glycine max

<400>	1914

cggctcgagc ggctcgagcg gctcgagaac ctacctcttt ttcttctctc tcaacaactt	60

caccttcttc cacctcgata atgtctcact tcaagggcaa gtaccatgat gagcttatcg	120

ccaatgctgc gtacattggc actcctggaa agggtattct tgctgctgat gagtcaacag	180

ggacaattgg caagcgtttg gccagcatca gtgtagagaa cattgaatcc aacaggcgag	240

ctcttaggga gct	253

<210>	1915
<211>	260
<212>	nucleic acid

<213> Glycine max

<400> 1915

aacagagcac ccttaaggca tggggcggaa aagaagagaa tgtgaagaag gctcaggaag 60

ccctttttggt aagagccaag gctaactcag aggcaactct gggaacctac aagggtaact 120

cacagcttgc tgatggtgcc tcagagagcc tccatgtttc gaactacagc tactgatcaa 180

tcgaagttgg tgttgtttga agagactagt gcgagtagga atcggtatta tgggtacaac 240

aaccgaattt cttgttgata 260

<210> 1916
<211> 257
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (74)
<223>

<400> 1916

aagcaacctc taacctacct ctttttcttc tctctcaaca acttcacctt cttcactctc 60

gatcatgaca cacntcaaag gcaagtacca tgatgagctt atcgccaatg ctgcgtacat 120

tggcactcct ggaaagggca ttcttgctgc tgatgagtca acagggacaa ttggcaagcg 180

tttggccagc atcagtgtag agaacattga atccacaggc gagctcttag ggagctgctt 240

ttcactgctc ctggtgt 257

<210> 1917
<211> 263
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (250),(258)
<223> unsure at all n locations

<400> 1917

ggagaatgtg aagaaggctc aggaagccct tttggtaaga gccaaggcca actcagaggc 60

aactctggga acctacaagg gtaactcaaa gcttgctgat ggtgcctcag agagcctcca 120

tgttgaggac tacaagtact gatcaatcta agtgcgggta ggaatcggta ttttatgggt 180

acaaccgaat tttcttgtta atgagtattg tgcttcgact cttcccagaa taataatcgt 240

ttggaatttn cctttggntt ccc 263

<210> 1918
<211> 260
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (33),(40),(83),(89),(157),(188)...(189),(195)...(196),
(200)
<223> unsure at all n locations

<400> 1918

ctctaaccta cctctttttc ttctctctca acnacttcan cttcttcctc ctgcgatcat 60

gtctcacttc aagggcaagt acnatgacng agcttatcgc caatgctgcg tacattggca 120

ctcctggaaa gggtattctt gctgctgatg agtcaanagg gacaattggc aagcgtttgg 180

ccagcatnng tgtanngaan attgaatcca acaggcgagc tcttagggag ctgcttttca 240

ctgctcctgg tgttcttcaa 260

<210> 1919
<211> 221
<212> nucleic acid
<213> Glycine max

<400> 1919

gatggctctc atgacattca caagtgtgct gccgtcaccg agcgtgtcct tgcagcatgc 60

tacaaggctt tgaatgatca ccacgtcctt cttgagggta ccctattgaa gccaaacatg 120

gtcacccccg gatccaattc tgctaaggtt tcccctcagg tggttgcgga gacactgtta 180

gagcccttca gagaaccgtg cctgctgcag ttcctgctat c 221

<210> 1920
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1920

ccaactcaga ggcaactctg ggaacctaca agggtaactc aaagcttgct gatggtgcct 60

cagagagcct ccatgttgag gactacaagt actgatcaat ctaagtgcgg gtaggaatcg 120

gtattttatg ggtacaaccg aattttcttg ttaatgagta ttgtgcttcg actcttccca 180

gaataataat cgtttggaat tttgcttttt gttttcctag tgttccttca tatcaatttt 240

agtaattcgg tgtattggtc aa 262

<210> 1921
<211> 145
<212> nucleic acid
<213> Glycine max

<400> 1921

cgtttggcca gcatcagtgt agagaatgtt gaatccaaca ggcgtgctct tagggagctg 60

cttttcaccg ctcccggtgc tcttaaatat ctcagtggtg tcatcctctt tgaggaaact 120

ctctaccaga gcacagctgc aggca 145

<210> 1922
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 1922

gctcaggaag ccctttttggt aagagccaag gccaactcag aggcaactct gggaagctac 60

aagggtaact caaagcttgc tgatggtgcc tcagagagct ccatgttgag gactacaagt 120

actgatcaat ctaagtgcgg gtaggaatcg gtattttatg ggtacaaccg aattttcttg 180

ttaatgagta ttgtgcttcg actcttccca gaataataat cgtttggaat tttgctttt 239

<210> 1923
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 1923

tccaacctct caagtccaac ctacccettt ttctgctccc accaacttca ccgtcttctt 60

cctcgatcat gtctcacttc aagggcaagt accatgatga gcttattgcc aatgctgctt 120

acattggcac tcctggaaag ggtattcttg ctgctgatga gtcaacaggg acaattggca 180

agcgtttggc cagcatcagt gtagagaatg ttgaatccaa caggcgtgct cttaggga 238

<210> 1924
<211> 210
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (36),(61)...(62),(173),(185),(200),(203),(206)
<223> unsure at all n locations

<400> 1924

ctttcttcca acctctcaag tccaacctac cccttnttct tctcccacca acttcaccgt 60

nnttcttcct cgatcatgtc tcacttcaag ggcaagtacc atgatgagct tattgccaat 120

gctgcttaca ttggcactcc tggaaaggga ttcttgctgc tgatgagtca acngggacat 180

ttggnagcgt ttgccaagcn ganatntaac 210

<210> 1925
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1925

aacctctcaa gtccaaccta cccctttttc ttctcccacc aacttcaccg tcttcttcct 60

cgatcatgtc tcacttcaag ggcaagtacc atgatgagct tattgccaat gctgcttaca 120

ttggcactcc tggaaagggg tatcttgctg ctgatgagtc aaccaggacc attggcaagc 180

gttttgccaa catccgtgta gaagatgttg aattccacaa ggcggctcct aaggaactgg 240

ttttcaacgg ttcccgtgct cct 263

<210> 1926
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 1926

gagaatgtga agaaggctca ggaagccctt ttggtaagag ccaaggctaa ctcagaggca 60

actctgggaa cctacaaggg taactcacag cttgctgatg gtgcctcaga gagcctccat 120

gtttcgaact acagctactg atcaatcgaa gttggtgttg tttgaagaga ctagtgcgag 180

taggaatcgg tattatgggt acaacaaccg aatttcttgt tgataagtat tattgtggtt 240

tgactcttcc cagaataatc gtttggaatt t 271

<210> 1927
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 1927

acctacctct ttttcttctc tctcaacgac ttcttcttct tcctcctcta tcatgtctta 60

cttcaagggc aagtaccatg atgagcttat tgccaatgct gcgtacattg gcagtcctgg 120

aaagggtatt cttgctgctg atgagtcagc agggacagtt ggcaatcgtt tggccacaat 180

cagtgtagac gacattgtat ccaacaggcg agctcttatg gagctgcttt tcactgctcc 240

t 241

<210> 1928
<211> 274
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2),(4),(9),(11),(35),(40),(47),(50),(55),(63),(65),
(79),(83),(146),(180),(212),(214)...(215),(228),(235),
(247)...(248),(255),(257)...(263),(265)
<223> unsure at all n locations

<400> 1928

ancnacctnt ntttcttctc tctcaacaac ttcanccggn ttcctcntcn atcangtctc 60

acntnaaggg gcaagtacna tgntgagctt atcgccaatg ctgcgtacat tggcactcct 120

ggaaagggta ttcttgctgc tgatgngtca acagggacaa ttggcaagcg tttggccagn 180

catcagtgta gagaacattg aatccaacag gngnnctctt agggagcngg ctttnactgc 240

tcctggnnat ctcantnnnn nnntngtgtc gtcc 274

<210> 1929
<211> 228
<212> nucleic acid
<213> Glycine max

<400> 1929

ctcaagtcca gcctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg tcaatgctgc ttacattggc 120

actcctggaa agggtattca tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

tccagcatca gtgtaggcga tgttgaatcc aacaggcgtg ctcttagg 228

<210> 1930
<211> 112
<212> nucleic acid
<213> Glycine max

<400> 1930

gtcccaacga gccatctgag ctggctatcc atgagaatgc ctatggcttg gccagatacg 60

ctgtcatatg ccaggagaat ggcctggttc ccattgttga gcctgagatc ct 112

<210> 1931
<211> 190
<212> nucleic acid
<213> Glycine max

<400> 1931

gcccttttgg taagagccaa ggctaactca gaggcaactc tgggaaccta caagggtaac 60

tcacagcttg ctgatggtgc ctcagagagc ctccatgttt cgaactacag ctactgatca 120

atcgaagttg gtgttgtttg aagagactag tgcgagtagg aatcggtatt atgggtacaa 180

caaccgaatt 190

<210> 1932
<211> 92
<212> nucleic acid
<213> Glycine max

<400> 1932

ggccaactca gaggcaactc tggggaacct acaagggtaa ctcaaagctt gctgatggtg 60

cctcagagag cctccatgtt gaggactaca ag 92

<210> 1933
<211> 232
<212> nucleic acid

<213> Glycine max

<400> 1933

ggctaactca gaggcaactc tgggaaccta caagggtaac tcacagcttg ctgatggtgc 60

ctcagagagc ctccatgttt cgaactacag ctactgatca atcgaagttg gtgttgtttg 120

aagagactag tgcgagtagg aatcggtatt atgggtacaa caaccgaatt tcttgttgat 180

aagtattatt gtggtttgac tcttcccaga ataatcgttt ggaattttgc tt 232

<210> 1934
<211> 148
<212> nucleic acid
<213> Glycine max

<400> 1934

ctctaaccta cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg 60

tctcacttca agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg ctgtctggcc acagactt 148

<210> 1935
<211> 92
<212> nucleic acid
<213> Glycine max

<400> 1935

cggctcgaga gaatgttgaa tccatcaggc ggcgtcttag ggagatgctt ttaaccgcta 60

ccggtgatct taaatatctc agtggtgtca tc 92

<210> 1936
<211> 144
<212> nucleic acid
<213> Glycine max

<400> 1936

ctacctcttt ttcttctctc tcaacaactt caccttcttc ctcctcgatc atgtctcact 60

tcaagggcaa gtaccatgat gagcttatcg ccaatgctgc gtacattggc actcctggaa 120

agggtattct tgctgctgat gagt 144

<210> 1937

<211> 152
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (99)
<223>

<400> 1937

accacgtcct tcttgagggt accctattga agccaaacat ggtcaccccc ggatccaatt 60

ctgctaaggg ttcccctcag gtggttgcgg agacactgnt agagccttca gagaaccgtg 120

ctgctgcagt tctgtatcgt ttcttgtctg gt 152

<210> 1938
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 1938

gcgaactgtt cccgctgctg ttccggccat tgtcttcttg tctggtgggc agagcgagga 60

ggaggcaacc ctcaacctca acgccatgaa caagtcccag ggaaagaagc cgtggtccct 120

ttctttctct tttggaaggg cacttcagca aagcactctc aaggcatggg gtgggaaaga 180

tgaaaacatt aagaaggctc aggatgcttt atttgccagg tgcaatgcaa actcacatgc 240

aactttggga acttacaaag gtgatgctac ccttgctgag ggtg 284

<210> 1939
<211> 283
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2),(41)
<223> unsure at all n locations

<400> 1939

anagattcaa caatgggcct ctggcttctg ctactcttct ncaagtcatc tcctgttctt 60

gacaagtgcg agtgggtctc aggccagacc cttcgccaac ctctcgtgag atgtaaccct 120

tcctcagcat cagctctcac catcaaagct gcttcctatg ctgacgagct cgtcaaaacc 180

gccaaaacag tggctcaccg gggcgtggta ttttggcgat ggatgagtca aatgcaactg 240

cgggaagcgt ttggcatcta ttgggttaga gaacacagaa gta 283

<210> 1940
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 1940

ggttgcttgg cggggataag attaaagatt caacaatggc ctctgcttct gctactcttc 60

tcaagtcatc tcctgttctt gacaagtgcg agtgggtcaa aggccagacc cttcgccaac 120

ctctcgtgag tgtaaccctt cctcagcatc agctctcacc atcaaagctg cttcctatgc 180

tgacgagctc gtcaaaaccg ccaaaacagt ggcctcaccg gggcgtggta ttttggcgat 240

ggatgagtca aatgcaa 257

<210> 1941
<211> 240
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (30),(32)
<223> unsure at all n locations

<400> 1941

gcggggataa gattagagat tcactgtatn gnctctgctt ctgctactcg tctcaagtca 60

tctcctgttc ttgacaagtg cgggtgggtc agaggccaga cccttcgcca acctctcgtg 120

agatgtaacc cttcctcagc atcagctctc accatcaaag ctgcttccta tgctgacgac 180

gtcgtcaaaa ccgccaaaac agtggcctca ccggggcgtg gtattttggc gatggatgag 240

<210> 1942
<211> 280
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (83),(217),(232),(241)...(242),(248),(267)...(268),
(275),(277)...(279)
<223> unsure at all n locations

<400> 1942

ggggataaga ttaaagattc aacaatggcc tctgcttctg ctactcttct caagtcatct 60

cctgttcttg acaagtgcga gtnggtcaaa ggccagaccc ttcgccaacc tctcgtgaga 120

tgtaaccctt cctcagcatc agctctcacc atcaaagctg cttcctatgc tgacgagctc 180

gtcaaaaccg gccaaaacag tgggcttcac cgggggncgt gggaatttgg gngatggatg 240

nngtcaangg caaccttggg ggaaggnntt tggcntnnnt 280

<210> 1943
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1943

cggggataag attaaagatt caacaatggc ctctgcttct gctactcttc tcaagtcatc 60

tcctgttctt gacaagtgcg agtgggtcaa aggccagacc cttcgccaac ctctcgtgag 120

atgtaaccct ccctcagcat cagctctcac catcaaagct gcttcctatg ctgacgagct 180

cgtcaaaacc gccaaaacag tggcctcacc ggggcgtggt attttggcga tggatgagtc 240

<210> 1944
<211> 174
<212> nucleic acid
<213> Glycine max

<400> 1944

ataagattaa agattcaaca atggcctctg cttctgctac tcttctcaag tcatctcctg 60

ttcttgacaa gtgcgagtgg gtcaaaggcc agacccttcg ccaacctctc gtgagatgta 120

acccttcctc agcatcagct ctcaccatca aagctgcttc ctatgctgac gagc 174

<210> 1945
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 1945

aagattaaag attcaacaat ggcctctgct tctgctactc ttctcaagtc atctcctgtt 60

gttgacaagt gcgagtgggt caaaggccag acccttcgcc aacctctcgt gagatgtaac 120

ccttcctcag catcagctct caccatcaaa gctgcttcct atgctgacga gctcgtcaaa 180

accgccaaaa cagtggcctc accggggcgt ggtattttgg cgatggatga gtca 234

<210> 1946
<211> 186
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (156),(180),(183)...(184)
<223> unsure at all n locations

<400> 1946

cggggataag attaaagatt caacaatggc ctctgcttct gctactcttc tcaagtcatc 60

tcctgttctt gacaagtgcg agtgggtcaa aggccagacc cttcgccaac ctctcgtgag 120

atgtaaccct tcctcagcat cagctctcac catcanagct gcttcctatg ctgacgagan 180

cgnnaa 186

<210> 1947
<211> 175
<212> nucleic acid
<213> Glycine max

<400> 1947

cggggataag attaaagatt caacaatggc ctctgcttct gctactcttc tcaagtcatc 60

tcctgttctt gacaagtgcg agtgggtcaa aggccagacc cttcgccaac ctctcgtgag 120

atgtaaccct tcctcagcat cagctctcac catcaaagct gcttcctatg ctgac 175

<210> 1948
<211> 168
<212> nucleic acid
<213> Glycine max

<400> 1948

cggggataag attaaagatt caacaatggc ctctgcttct gctactcttc tcaagtcatc 60

tcctgttctt gacaagtgcg agtgggtcaa aggccagacc cttcgccaac ctctcgtgag 120

atgtaaccct tcctcagcat cagctctcac catcaaagct gcttccta 168

<210> 1949
<211> 120
<212> nucleic acid
<213> Glycine max

<400> 1949

atcggtttcc cgccatatat ccaataagct ttaaccatgt ctgcctttgt tggaaagtac 60

gcagatgagc ttatcaagaa tgccaagtac atagccacac ctgggaaggg catcttggca 120

<210> 1950
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1950

caaagctcaa caccttgtct tcccagtggc tcgcccacaa ttccttctct cctcgccgtg 60

gatcctcttc tcgccgagtc tctcttccga tccgcgcttc ttcttaccaa cacgaactct 120

tccaaaccgc caaatctatt gcatctcccg gtcgtggaat tcttgcaatt gatgaatcaa 180

atgccacatg tgggaagcgt ttagcatcca ttggattgga caatactgag gtgaatcgcc 240

aggcctatag gcaact 256

<210> 1951
<211> 280
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45)
<223>

<400> 1951

accactttct gtttctcttc actctaatgg ccatggcagc gtctncaaag ctcaacacct 60

tgtcttcttc ccagtggatc gcccacaatt ccttctctcc tcgccgtgga tcctcttctc 120

gccgagtctc tcttccgatc cgcgcttctt cttaccaaca cgaactcgtc caaaccgcca 180

aatccattgc atcacccggc cgtggaattc ttgcaattga tgaatcaaat gccacatgtg 240

ggaaacgatt agcatccatt ggattggaca ataccgaggt 280

<210> 1952
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 1952

ctttctcttt ctcttcactc taaagtctaa gcatccatgg ccatggcgtc tgcaaagctc 60

aacaccttgt cttcccagtg gatcgcccac aattccttct ctcctcgccg tggatcctct 120

tctcgccgag tctctcttcc gatccgcgct tcttcttacc aacacgaact cgtccaaacc 180

gccaaatcta ttgcatctcc cggtcgtgga attcttgcaa ttgatgaatc aaatgccaca 240

tgtgggaagc gtttagcatc cattggat 268

<210> 1953
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1953

actttctgtt tctcttcact ctaatggcca tggcagcgtc tgcaaagctg cacaccttgt 60

cttcttccca gtggatcgcc cacaattcct tctctcctcg ccgtggatcc tcttctcgcc 120

gagtctctct tccgatccgc gcttcttctt accaacacga actcgtccaa accgccaaat 180

ccattgcatc acccggccgt ggaattcttg caattgatga atcaaatgcc acatgtggga 240

aacgattagc atccattgga tt 262

<210> 1954
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1954

ctctaagcat ccatggccat ggcgtctgca aagctcaaca ccttgtcttc ccagtggatc 60

gcccacaatt ccttctctcc tcgccgtgga tcttcttctc gctgagttct gtcttccgat 120

ccgcgcttct tcttaccaac acgaactcgt ccaaaccgcc agatctattg catctcccgg 180

tcgtggaatt cttgcaattg atgaatcaaa tgccacatgt gggaagcgtt tagcatccat 240

tggattggac aatactgagg tg 262

<210> 1955
<211> 187
<212> nucleic acid
<213> Glycine max

<400> 1955

gcaaagctca acaccttgtc ttcttcccag tggatcgccc acaattcctt ctctcctcgc 60

cgtcgatcct cttctcgccg agtctctctt ccgatccgcg cttcttctta ccaacacgaa 120

ctcttccaaa ccgccaaatc cattgcatca cccggccgtg gaattcttgc aattgatgaa 180

tccaaat 187

<210> 1956
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 1956

tacagcccca ctttctcttt ctctttctct tcactctaaa gtctaagcat ccatggccat 60

ggcgtctgca aagctcaaca ccttgtcttc ccagtggatc gcccacaatt ccttctctcc 120

tcgccgtgga tcctcttctc gccgagtctc tcttccgatc cgcgcttctt cttaccaaca 180

cgaactcgtc caaaccgcca aatctattgc atctcccggt cgtggaattc ttgcaatgga 240

tgaatc 246

<210> 1957
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 1957

ctccccaatt ctcaagccaa ccatgtcttc cttcaagagc aagtaccaag atgaactcat 60

tgccaatgct gcttacattg gcaccccagg gaagggtatc cttgctgctg atgagtcaac 120

tggtacaatt ggcaagcgat tggccagcat taatgtcgag aatgttgaag caaataggcg 180

tgctcttcgt gaactcctat tcaccacacc tggtgctttt gagtgcctca gtggtgtgat 240

cttgtttgag gaaaccctat accaaaagac agcttcagga aaacccttc 289

<210> 1958
<211> 284

<212> nucleic acid
<213> Glycine max

<400> 1958

cctcaagcca accatgtctt ccttcaagag caagtaccaa gatgaactca ttgccaatgc 60

tgcttacatt ggcaccccag ggaagggtat ccttgctgct gatgagtcaa ctggtacaat 120

tggcaagcga ttggccagca ttaatgtcgg aatgttgaag caaataggcg tgctcttcgt 180

gaactcctat tcaccacacc tggtgctttt gagtgcctca gtggtgtgat cttgtttgag 240

gaaaccctat accaaaagac agcttcagga aaacccttcg taga 284

<210> 1959
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 1959

cttcgtcaaa accaaccaaa cccctcccca attctcaagc caaccatgtc ttccttcaag 60

agcaagtacc aagatgaact cattgccaat gctgcttaca ttggcacccc agggaagggt 120

atccttgctg ctgatgagtc aactggtaca attggcaagc gattggccag cattaatgtc 180

gagaatgttg aagcaaatag gcgtgctctt cgtgaactcc tattcaccac acctggtgct 240

tttgagtgcc tcagtggtgt gatcttgttt gaggaaaccc tataccaaaa 290

<210> 1960
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (200)
<223>

<400> 1960

cctccccaat tctcaagcca accatgtctt ccttcaagag caagtaccaa gatgaactca 60

ttgccaatgc tgcttacatt ggcaccccag ggaagggtat ccttgctgct gatgagtcaa 120

ctggtacaat tggcaagcga ttggccagca ttaatgtcga gaatgttgaa gcaaataggc 180

gtgctcttcg tgaactcctn ttcaccacac ctggtgcttt tgagtgcctc agtggtgtga 240

tcttgtttga ggaaacccta tacc 264

<210> 1961
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 1961

caattctcaa gccaaccatg tcttccttca agagcaagta ccaagatgaa ctcattgcca 60

atgctgctta cattggcacc ccagggaagg gtatccttgc tgctgatgag tcaactggta 120

caattggcaa gcgattggcc agcattaatg tcgagaatgt tgaagcaaat aggcgtgctc 180

ttcgtgaact cctattcacc acacctggtg cttttgagtg cctcagtggt gtgatcttgt 240

ttgaggaaac cctataccaa aaga 264

<210> 1962
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 1962

gtcttctcac ttcgtcaaaa ccaaccaaac ccctccccaa ttctcaagcc aaccatgtct 60

tccttcaaga gcaagtacca agatgaactc attgccaatg ctgcttacat tggcacccca 120

gggaagggta tccttgctgc tgatgagtca actggtacaa ttggcaagcg attggccagc 180

attaatgtcg agaatgttga agcaaatagg cgtgctcttc gtgaactcct attcaccaca 240

cctggtgctt tagagtgcct cagtggtgtg atct 274

<210> 1963
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 1963

cctccccaat tctcaagcca accatgtctt ccttcaagag caagtaccaa gatgaactca 60

ttgccaatgc tgcttacatt ggcaccccag ggaagggtat ccttgctgct gatgagtcaa 120

ctggtacaat tggcaagcga ttggccagca ttaatgtcga gaatgttgaa gcaaataggc 180

gtgctcttcg tgaactccta ttcaccacac ctggtgcttt tgagtgcctc agtggtgtga 240

<210> 1964
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1964

ccgttgtctt ctcacttcgt caaaaccaac caaacccctc cccaattctc aagccaacca 60

tgtcttcctt caagagcaag taccaagatg aactcattgc caatgctgct tacattggca 120

ccccagggaa gggtatcctt gctgctgatg agtcaactgg tacaattggc aagcgattgg 180

ccagcattaa tgtcgagaat gttgaagcaa ataggcgtgc tcttcgtgaa ctcctattca 240

ccacacctgg tgcttttgag tgcctcagtg gtgtgatctt 280

<210> 1965
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 1965

cgatgtcttc tcacttcgtc aaaaccaacc aaacccctcc ccaattctca agccaaccat 60

gtcttccttc aagagcaagt accaagatga actcattgcc aatgctgctt acattggcac 120

cccagggaag ggtatccttg ctgctgatga gtcaactggt acaattggca agcgattggc 180

cagcattaat gtcgagaatg ttgaagcaaa taggcgtgct cttcgtgaac tcctattcac 240

cacacctggt gcttttgagt gcctcagtgg tgtgatc 277

<210> 1966
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 1966

ccgttgtctt ctcacttcgt caaaaccaac caaacccctc cccaattctc aagccaacca 60

tgtcttcctt caagagcaag taccaagatg aactcattgc caatgctgct tacattggca 120

ccccagggaa gggtatcctt gctgctgatg agtcaactgg tacaattggc aagcgattgg 180

ccagcattaa tgtcgagaat gttgaagcaa ataggcgtgc tcttcgtgaa ctcctattca 240

ccacacctgg tgcttttgag tgcctc 266

<210> 1967
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 1967

cttctcactt cgtcaaaacc aaccaaaccc ctccccaatt ctcaagccaa ccatgtcttc 60

cttcaagagc aagtaccaag atgaactcat tgccaatgct gcttacattg gcaccccagg 120

gaagggtatc cttgctgctg atgagtcaac tggtacaatt ggcaagcgat tggccagcat 180

taatgtcgag aatgttgaag caaataggcg tgctcttcgt gaactcctat tcaccacacc 240

tggtgctttt gagtgcctca 260

<210> 1968
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 1968

cgttgtcttc tcacttcgtc aaaaccaacc aaacccctcc ccaattctca agccaaccat 60

gtcttccttc aagagcaagt accaagatga actcattgcc aatgctgctt acattggcac 120

cccagggaag ggtatccttg ctgctgatga gtcaactggt acaattggca agcgattggc 180

cagcattaat gtcgagaatg ttgaagcaaa taggcgtgct cttcgtgaac tcctattcac 240

cacacct 247

<210> 1969
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1969

cctcgagcga atcggctcga gcgttgtctt ctcacttcgt caacgaccaa ccaaacccct 60

ccccaattct caagccaacc atgtcgtcct tcaagagcaa gtaccaagat gaactcattg 120

ccaatgctgc ttacattggc accccaggga agggtatcct tgctgctgat gagtcaactg 180

gtacaattgg caagcgattg gccagcatta atgtcgagaa tgttgaagca aataggcgtg 240

ctcttcgtga actcctattc accacacctg gt 272

<210> 1970
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1970

cgttgtcttc tcacttcgtc aaaaccaacc aaacccctcc ccaattctca agccaaccat 60

gtcttccttc aagagcaagt accaagatga actcattgcc aatgctgctt acattggcac 120

cccagggaag ggtatccttg ctgctgatga gtcaactggt acaattggca agcgattggc 180

cagcattaat gtcgagaatg ttgaagcaaa taggcgtgct cttcgtgaac tcctattcac 240

cacacctggt gcttttgagt gcc 263

<210> 1971
<211> 299
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (7)...(8),(10),(59),(62),(80)
<223> unsure at all n locations

<400> 1971

gtcttcnnan ttcgtcaaaa ccaaccaaac ccctccccaa ttctcaagcc aaccatgtnt 60

cnccttcaag agcaagtacn aagatgaact cattgccaat gctgcttaca ttggcacccc 120

agggaagggt atccttgctg ctgatgagtc aactggtaca attggcaagc gattggccag 180

cattaatgtc gagaatgttg aagcaaatag gcgtgctctt cgtgaactcc tattcaccac 240

acctggtgct tttgagtgcc tcatggtgtg atcttgtttg aggaaaccct ataccaaaa 299

<210> 1972
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 1972

ttctcacttc gtcaaaacca accaaacccc tccccaattc tcaagccaac catgtcttcc 60

ttcaagagca agtaccaaga tgaactcatt gccaatgctg cttacattgg caccccaggg 120

aagggtatcc ttgctgctga tgagtcaact ggtacaattg gcaagcgatt ggccagcatt 180

aatgtcgaga atgttgaagc aaataggcgt gctcttcgtg aactcctatc cacca 235

<210> 1973
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 1973

cgttgtcttc tcacttcgtc aaaaccaacc aaacccctcc ccaattctca agccaaccat 60

gtcttccttc aagagcaagt accaagatga actcattgcc aatgctgctt acattggcac 120

cccagggaag ggtatccttg ctgctgatga gtcaactggt acaattggca agcgattggc 180

cagcattaat gtcgagaatg ttgaagcaaa taggcgtgct cttcgtgaac tcctattcac 240

cacacctggt gcttttgagt g 261

<210> 1974
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1974

ctcgagccgc gttgtcttct cacttcgtca aaaccaacca aagcactccc caattctcaa 60

gccaaccatg tcgtccttca agagcaagta ccaagatgaa ctcattgcca atgctgctta 120

cattggcacc ccagggaagg gtatccttgc tgctgatgag tcagctggta caattggcaa 180

gcgaggggcc agcattaatg tcgagaatgt tgaagcagat aggcgtgctc tgcgtgaact 240

cctattcacc acacct 256

<210> 1975
<211> 216
<212> nucleic acid
<213> Glycine max

<400> 1975

agaaccgttg tcttctcact tcgtcaaaac caaccaaacc cctccccaat tctcaagcca 60

accatgtctt ccttcaagag caagtaccaa gatgaactca ttgccaatgc tgcttacatt 120

ggcaccccag ggaagggtat ccttgctgct gatgagtcaa ctggtacaat tggaaagcga 180

ttggccagca ttaatgtcga gaatgttgaa ccaata 216

<210> 1976
<211> 212
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (8),(23),(79),(88),(111),(151),(190),(198)...(199)
<223> unsure at all n locations

<400> 1976

ccgttgtntt ctcacttcgt canaaccaac caaacccctc cccaattctc aagccaacca 60

tgtcttcctt caagagcang taccaagntg aactcattgc caatgctgct nacattggca 120

ccccagggaa gggtatcctt gctgctgatg ngtcaactgg tacaattggc aagcgattgg 180

ccagcattan tgtcgagnnt gttgaagcaa at 212

<210> 1977
<211> 147
<212> nucleic acid
<213> Glycine max

<400> 1977

ccaattctca agccaaccat gtcttccttc aagagcaagt accaagatga actcattgcc 60

aatgctgctt acattggcac cccagggaag ggtatccttg ctgctgatga gtcaactggt 120

acaattggca agcgattggc cagcatt 147

<210> 1978
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 1978

caaggttgaa catcatcaca ttcgtacaac aaccaaccaa acccctccac aattctcagc 60

caaccatgtc ttccttcaca agcaagtacc aagatgaact cattgccaat gctgcttaca 120

ttggcacccc agggaagggt ctccttgctg ctgatgaatc actggtacaa ttggcaagcg 180

cttggccagc attaatgtcg agaatgttga agcacatagg cgtgctcttc gtgaactcct 240

attcaccaca cctggtgctt ttgagtgcct cagtgg 276

<210> 1979
<211> 272
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (54),(71),(99),(219)
<223> unsure at all n locations

<400> 1979

gcctctgcat cagcatctct gctcaagtct tcacttgttc ttgacaagtc tgantgggtg 60

aagggacaaa nccttcgcca accttctgca tcagttgtna gatgcaaccc caccacccca 120

tcaggcctca ccatcagagc tggttcctat gctgatgagc tcgttaagac cgcgaaaaca 180

gtggcttcac cagggagggg tattttggcc atggatgant ccaatgctac ctgtgggaag 240

cgtttggctt caattgggct agagaacact ga 272

<210> 1980
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 1980

tgcagtagtg ctaagtgcta acacctgcag tgaacaatgg cctctgcatc agcatctctg 60

ctcaagtctt cacttgttct tgacaagtct gagtgggtga agggacaaac ccttcgccaa 120

ccttctgcat cagttgtgag atgcaacccc accaccccat caggcctcac catcagagct 180

ggttcctatg ctgatgagct cgttaagacc gcgaaaacag tggcttcacc agggaggggt 240

attttggcca tggatgagtc caatgctacc tgtgggaagc gtttggcttc aattg 295

<210> 1981
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1981

gcagtgaaca atggcctctg catcagcatc tctgctcaag tcttcacttg ttcttgacaa 60

gtctgagtgg gtgaagggac aaacccttcg ccaaccttct gcatcagttg tgagatgcaa 120

ccccaccacc ccatcaggcc tcaccatcag agctggttcc tatgctgatg agctcgttaa 180

gaccgcgaaa acagtggctt caccagggag ggtattttg gccatggatg agtccaatgc 240

tacctgtggg aagcgtttgg cttcattggg ctagagacat gaagct 286

<210> 1982
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 1982

catctctgct caagtcttca cttgttcttg acaagtctga gtgggtgaag ggacaaaccc 60

ttcgccaacc ttctgcatca gttgtgagat gcaaccccac caccccatca ggcctcacca 120

tcagagctgg ttcctatgct gatgagctcg ttaagaccgc gaaaacagtg gcttcaccag 180

ggaggggtat tttggccatg gatgagtcca atgctacctg tgggaagcg 229

<210> 1983
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 1983

gacaagtctg agtgggtgaa gggacaaaca cttcgccaac cttctgctgc atcagttgtg 60

agatgcaacc ccaccacccc atcaggcctc accatcagag ctggttccta tgctgatgag 120

ctcgttaaga ccgcgaaacc agtggcttca ccagggaggg gtattatggc catggatgag 180

tccaatgcta cctgtgggaa gcgtttggct tcaattgggc tagagaacac tgaagctaac 240

cgccagcata ccgtaccctc ctt 263

<210> 1984
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 1984

gcagtagtgc taagtgctaa cacctgcagt gaacaatggc ctctgcatca gcatctctgc 60

tcaagtcttc acttgttctt gccaagtctg agtgggtgaa gggacaaacc cttcgccaac 120

cttctgcatc agttgtcaga tgcaacccca ccaccccatc aggcctcacc atcagagctg 180

gttcctatgc tgatgagctc gttaagaccg cgaaaacagt ggcttcacca gggaggggta 240

ttttggccat ggatgagtcc actgctacct gtgg 274

<210> 1985
<211> 293
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(29),(64),(132),(168),(281)
<223> unsure at all n locations

<400> 1985

tacaaaggnt gctgtaggag ataagattnc agtagtgcta agtgctaaca cctgcagtga 60

acantggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gncaaacccct tcgccaacct tctgcatcag ttgtgagntg caacccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcaccaag gaggggtatt ttggccatgg ntgagtccaa tgc 293

<210> 1986
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 1986

gattgcagta gtgctaagtg ctaacacctg cagtgaacaa tggcctctgc atcagcatct 60

ctgctcaagt cttcacttgt tcttgacaag tctgagtggg tgaagggaca aacccttcgc 120

caaccttctg catcagttgt gagatgcaac cccaccaccc catcaggcct caccatcaga 180

gctggttcct atgctgatga gctcgttaag accgcgaaaa cagtggcttc accagggagg 240

ggtattttgg ccatggatga gtcca 265

<210> 1987
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 1987

aaaggttgct gtaggagata agattgcagt agtgctaagt gctaacacct gcagtgaaca 60

atggcctctg catcagcatc tctgctcaag tcttcacttg ttcttgacaa gtctgagtgg 120

gtgaagggac aaacccttcg ccaaccttct gcatcagttg tgagatgcaa ccccaccacc 180

ccatcaggcc tcaccatcag agctggttcc tatgctgatg agctcgttaa gaccgcgaaa 240

acagtggctt caccagggag ggtattttg gccatggatg ag 282

<210> 1988
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 1988

tagtgctaag tgctaacacc tgcagtgaac aatggcctct gcatcagcat ctctgctcaa 60

gtcttcactt gttcttgaca agtctgagtg ggtgaaggga caaacccttc gccaaccttc 120

tgcatcagtt gtgagatgca accccaccac cccatcaggc ctcaccatca gagctggttc 180

ctatgctgat gagctcgtta agaccgcgaa aacagtggct tcaccaggga ggggtatttt 240

ggacatggat g 251

<210> 1989
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1989

cggctcgagg gagataagat tgcagtagtg ctaagtgcta acacctgcag tgaacaatgg 60

cctctgcatc agcatctctg ctcaagtctt cacttgttct tgacaagtct gagtgggtga 120

agggacaaac ccttcgccaa ccttctgcat cagttgtgag atgcaacccc accaccccat 180

caggcctcac catcagagct ggttcctatg ctgatgagct cgttaagacc gcgaaaacag 240

tggcttcacc agggaggggt attttggcca tgg 273

<210> 1990
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 1990

cagattgcag tagtgctaag tgctaacacc tgcagtgaac aatggcctct gcatcagcat 60

ctctgctcaa gtcttcactt gttcttgaca agtctgagtg ggtgaaggga caaacccttc 120

gccaaccttc tgcatcagtt gtgagatgca accccaccac cccatcaggc ctcaccatca 180

gagctggttc ctatgctgat gagctcgtta agaccgcgaa aacagtggct tcaccagggc 240

ggggtattcc tcccatggat gagctcaatg ctccctgtgg gaagcg 286

<210> 1991
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 1991

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccaggga ggggtatttt gg 272

<210> 1992
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 1992

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcaccagg gaggggtatt ttggccatgg 280

<210> 1993
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 1993

aaggttgctg taggagataa gattgcagta gtgctaagtg ctaacacctg cagtgaacaa 60

tggcctctgc atcagcatct ctgctcaagt cttcacttgt tcttgacaag tctgagtggg 120

tgaagggaca aacccttcgc caaccttctg catcagttgt gagatgcaac cccaccaccc 180

catcaggcct caccatcaga gctggttcct atgctgatga gctcgttaag accgcgaaaa 240

cagtggttca ccagggaggg gtattttggc catggatgag tcca 284

<210> 1994
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 1994

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcaccagg gaggggtatt ttgg 274

<210> 1995
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 1995

aggagataag attgcagtag tgctaagtgc taacacctgc agtgaacaat ggcctctgca 60

tcagcatctc tgctcaagtc ttcacttgtt cttgacaagt ctgagtgggt gaagggacaa 120

acccttcgcc aaccttctgc atcagttgtg agatgcaacc ccaccacccc atcaggcctc 180

accatcagag ctggttccta tgctgatgag ctcgttaaga ccgcgaaaac agtggcttca 240

ccagggaggg gt 252

<210> 1996
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 1996

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccaggga ggggtattt 269

<210> 1997
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 1997

ctcgagccga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa caatggcctc 60

tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt gggtgaaggg 120

acaaaccctt cgcaaccttc tgcatcagtt gtgagatgca accccaccac cccatcaggc 180

ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa aacagtggct 240

tcaccaggga ggggta 256

<210> 1998
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 1998

ggctcataca aaggttgctg aggagataag attgcagtag tgctaagtgc taacacctgc 60

agtgaacaat ggcctctgca tcagcatctc tgctcaagtc ttcacttgtt cttgacaagt 120

ctgagtgggt gaagggacaa acccttcgcc aaccttctgc atcagttgtg agatgcaacc 180

ccaccacccc atcaggcctc accatcagag ctggttccta tgctgatgag ctcgttaaga 240

ccgcgaaaac agtggcttca ccagggaggg gta 273

<210> 1999
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 1999

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccaggga gg 262

<210> 2000
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2000

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aagaccgcga 240

aaacagtggc ttcaccaggg ag 262

<210> 2001
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2001

catacaaagg ttgctgtagg agataagatt gcagtagtgc taagtgctaa cacctgcagt 60

gaacaatggc ctctgcatca gcatctctgc tcaagtcttc acttgttctt gacaagtctg 120

agtgggtgaa gggacaaacc cttcgccaac cttctgcatc agttgtgaga tgcaacccca 180

ccaccccatc aggcctcacc atcagagctg gttcctatgc tgatgagctc gttaagaccg 240

cgaaaacagt ggcttcacca gggagggg 268

<210> 2002
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2002

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

acgccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcaccagg gaggggt 267

<210> 2003
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2003

gattgcagta gtgctaagtg ctaacacctg cagtgaacaa tggcctctgc atcagcatct 60

ctgctcaagt cttcacttgt tcttgacaag tctgagtggg tgaagggaca aacccttcgc 120

caaccttctg catcagttgt gagatgcaac cccaccaccc catcaggcct caccatcaga 180

gctggttcct atgctgatga gctcgttatc accgcgaaaa cagtggcttc accagggagg 240

ggtatttt 248

<210> 2004
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2004

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcacca 258

<210> 2005
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2005

aggttgctgt aggagataag attgcagtag tgctaagtgc taatgcctgc agtgaacaat 60

ggcctctgca tcagcatctc tgctcaagtc ttcacttgtt cttgacaagt ctgagtgggt 120

gaagggacaa acccttcgcc aaccttctgc atcagttgtg agatgcaacc ccaccacccc 180

atcaggcctc accatcagag ctggttccta tgctgatgag ctcgttaaga ccgcgaaaac 240

agtggcttc 249

<210> 2006
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2006

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcacca 258

<210> 2007
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2007

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccag 257

<210> 2008
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2008

tacaaatgtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcac 256

<210> 2009
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2009

ggttgctgta ggagataaga ttgcagtagt gctaagtgct aacacctgca gtgaacaatg 60

gcctctgcat cagcatctct gctcaagtct tcacttgttc ttgacaagtc tgagtgggtg 120

aagggacaaa cccttcgcca accttctgca tcagttgtga gatgcaaccc caccacccca 180

tcaggcctca ccatcagagc tggttcctat gctgatgagc tcgttaagac cgcgaaaaca 240

gtggcttcac cag 253

<210> 2010
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2010

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtgt 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagatggcg 240

aaaacagtgg cttcaccagg gaggggtatt ttg 273

<210> 2011
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2011

aaaggttgct gtaggagata agattgcagt agtgctaagt gctaacacct gcagtgaaca 60

atggcctctg catcagcatc tctgctcaag tcttcacttg ttcttgacaa gtctgattgg 120

gtgaagggac aaacccttcg ccaaccttct gcatcagttg tgagatgcaa ccccaccacc 180

ccatcaggcc tcaccatcag agctggttcc tatgctgatg agctcgttaa gaccgcgaaa 240

acagtggctt caccagggag gggta 265

<210> 2012
<211> 265
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (10),(163)
<223> unsure at all n locations

<400> 2012

ctaaggtttn ctgtaggaga taagattgca gtagagctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgngagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aagaccgcga 240

aaacagtggc ttcaccaggg agggg 265

<210> 2013
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2013

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aagaccgcga 240

aaacagtggc ttcacca 257

<210> 2014
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2014

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcagtt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccatgga ggggt 265

<210> 2015
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2015

atacaaaggt tgctgtagga gataagattg cagtagtgct aagtgctaac acctgcagtg 60

aacaatggcc tctgcatcag catctctgct caagtcttca cttgttcttg acaagtctga 120

gtgggtgaag ggacaaaccc ttcgccaacc ttctgcatca gttgtgagat gcaaccccac 180

caccccatca ggcctcacca tcagagctgg ttcctatgct gatgagctcg ttaagaccgc 240

gaaaacagtg gcttc 255

<210> 2016
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (195)...(196),(258)
<223> unsure at all n locations

<400> 2016

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggccttc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcnncatc agagctggtt cctatgctga tgagctcgtt aagaccgcga 240

aaacagtggc ttcaccangg aggg 264

<210> 2017
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2017

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct 250

<210> 2018
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2018

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct 250

<210> 2019
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2019

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagt 246

<210> 2020
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2020

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgagggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aagaccgcga 240

aaacagtggc tt 252

<210> 2021
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2021

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagt 248

<210> 2022
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2022

caaaggttgc tgtaggagat aagattgcag tagtgcaaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccaggga 260

<210> 2023
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2023

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga aaacccttcg ccaaccttct gcatcagttg tgagatgcaa ccccaccacc 180

ccatcaggcc tcaccatcag agctggttcc tatgctgatg agctcgttaa gaccgcgaaa 240

acagtggctt cacc 254

<210> 2024
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2024

acgttgctgt aggagataag attgcagtag tgctaagtgc taacacctgc agtgaacaat 60

ggcctctgca tcagcatctc tgctcaagtc ttcacttgtt cttgacaagt ctgagtgggt 120

gacgggacaa acccttcgcc aaccttctgc atcagttgtg agatgcaacc gcaccacccc 180

atcaggcctc accatcagag ctggttccta tgctgatgat ctcgttagga ccgcgacaac 240

agtggcttca ccagggag 258

<210> 2025
<211> 267
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (13),(62),(92),(179),(231),(253),(266)
<223> unsure at all n locations

<400> 2025

gcagtagcgc tangtgctaa cacctgcagt gaacaatggc ctctgcatca gcatctctgg 60

tncaagtctt cacttgttct tgacaagtct gngtgggtga agggacaaac ctttcgccaa 120

ccttctgcat cagttgtgag atgcaacccc accaccccat caggcctcac catcagagnt 180

ggttcctatg ctgatgagct cgttaagacc gcgaaaacag tggcttcacc ncggaggggt 240

attttggcct ggntgagtcc aatgcnc 267

<210> 2026
<211> 270
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (8)...(9),(40),(259)
<223> unsure at all n locations

<400> 2026

acaaaggnng ctgtaggaga taagattgca gtagtgctan gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctgctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcaccang gaggggtatt 270

<210> 2027
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2027

acgcgttcgg ctcgagattg cagtagtgct aagtgctaac acctgcagtg tacaatggcc 60

tctgcatcag catctctgct caagtcttca cttgttcttg acaagtctga gtgtgtgaag 120

ggacaaaccc ttcgccaacc ttctgcatca gttgtgagat gcaaccccac caccccatca 180

ggcctcacca tcagagctgg ttcctatgct gatgagctcg ttaagaccgc gaaaacagtg 240

gcttcacctc ggaggggtat tttggccatg gat 273

<210> 2028
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2028

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aagaccgcga 240

aaacgtggct tcacc 255

<210> 2029
<211> 265
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (96)
<223>

<400> 2029

cggctcgagc aaaggttgct gtaggagata agattgcagt tcatgctaag tgctaacacc 60

tgcagtgaac aatggcctct gcatcagaat ctctgnctca gtcttcactt gttcttgaca 120

agtctgagtg ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca 180

accccaccac cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta 240

agaccgcgaa aacagtggct tcacc 265

<210> 2030
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2030

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

a 241

<210> 2031
<211> 266

<212>	nucleic acid
<213>	Glycine max

<400>	2031

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accctacaac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat gagctcgtta agaccgcgaa 240

aacagtggct tcaccaggga ggggtt 266

<210>	2032
<211>	277
<212>	nucleic acid
<213>	Glycine max

<400>	2032

taagattgca gtagtgctaa gtgctaacac ctgcagtgaa caatggcctc tgcatcagca 60

tctctgctca agtcttcact tgttcttgac aagtctgagt gggtgaaggg acaaaccctt 120

cgccaacctt ctgcatcagt tgtgagtgca accccaccac cccatcaggc ctcaccatca 180

gagctggttc tatgctgatg agctcgttaa gaccgcgaaa acagtggttc accagggagg 240

ggtattttgg ccatggatga gtccatgcta cctgtgg 277

<210>	2033
<211>	261
<212>	nucleic acid
<213>	Glycine max

<400>	2033

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg agagctcgtt aagaccgcga 240

aaacagtggc ttcaccaggg a 261

<210>	2034
<211>	237

<212> nucleic acid
<213> Glycine max

<400> 2034

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aagaccg 237

<210> 2035
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2035

gttgctgtag gagataagat tgcagtagtg ctaagtgcta acacctgcag tgaacaatgg 60

cctctgcatc agcatctctg ctcaagtctt cacttgtact tgacaagtct gagtgggtga 120

agggacaaac ccttcgccaa ccttctgcat cagttgtgag atgcaacccc accattacat 180

caggcacacc atcagagctg gttcctatgc tgatgagctc gttaagaccg cgttaacagt 240

agcttcacca tggagggg 258

<210> 2036
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2036

acaactacaa aggttgctgt aggagataag atattgaagt agtgctaagt gcctaacacc 60

tgcagtgaac aatggcctct gcatcagcat ctcttctcaa gtcttcactt gttcttgaca 120

agtctgagtg ggtgaaggga caaacacttc gccaaccttc tgctgcatca gttgtgagat 180

gcaaccccac caccccatca ggcctcacaa tcagagctgg ttcctatgct gatgagctcg 240

ttaagaccgc gaaaacagtg gcttcaccag ggagggg 277

<210> 2037
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2037

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctggcatca gttgtgagat gcaaccccac 180

caccccatca ggcctcacca tcagagctgg ttcctatgct gatgagctcg ttaagaccgc 240

gaaaacagtg gcttcacc 258

<210> 2038
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2038

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctgcatcagt tgtgagatgc aaccccacca 180

ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt aaga 234

<210> 2039
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2039

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgcctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaaggg acaaacactt cgccaacctt ctgctgcatc agttgtgaga 180

tgcaacccca ccaccccatc aggcctcaca atcagagctg gttcctatgc tgatgagctc 240

gttaaga 247

<210> 2040
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2040

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc ttttctcaag tcttcatatg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg 180

caaccccacc accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt 240

taagaccgcg aaaacagtgg 260

<210> 2041
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2041

ctcatacaaa ggttgctgta ggagataaga ttgcagtagt gctaagtgct aacacctgca 60

gtgaacaatg gcctctgcat cagcatctct gctcaagtct tcacttgttc ttgacaagtc 120

tgagtgggtg aagggacaaa cccttcgcca accttctgca tcagttgtga gatgcaaccc 180

caccacccca tcaggcctca ccatcagagc tggttcctat gctgatgagc tcgttaagac 240

cgcgaaaaca gtggcttca 259

<210> 2042
<211> 278
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (265)
<223>

<400> 2042

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg 180

caaccccacc accccatcag gcctcacaat cagagctggt tccctatgct gatgagctcg 240

ttaagaccgc gaaaacagtg gcttnaccag ggaggggt 278

<210> 2043

<211> 238
<212> nucleic acid
<213> Glycine max

<400> 2043

ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct gcagtgaaca 60

atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa gtctgagtgg 120

gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg caacccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccg 238

<210> 2044
<211> 260
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (62),(106),(157),(163),(206),(254)
<223> unsure at all n locations

<400> 2044

ctacaaaggt tgctgtagga gataagattg cagtagtgct aagtgctaac acctgcagtg 60

ancaatggcc tctgcatcag catctctgct caagtcttca cttgtncttg acaagtctga 120

gtgggtgaag ggacaaaccc ttcgccaacc ttctgcntca gtngtgagat gcaaccccac 180

caccccatca ggcctcacca tcaganctgg ttcctatgct gatgagtcgt taagaccgcg 240

aaaacagtgg ttcnccaggg 260

<210> 2045
<211> 223
<212> nucleic acid
<213> Glycine max

<400> 2045

aaaggttgct gtaggagata agattgcagt agtgctaagt gctaacacct gcagtgaaca 60

atggcctctg catcagcatc tctgctcaag tcttcacttg ttcttgacaa gtctgagtgg 120

gtgaagggac aaacccttcg ccaaccttct gcatcagttg tgagatgcaa ccccaccacc 180

ccatcaggcc tcaccatcag agctggttcc tatgctgatg agc 223

<210> 2046
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2046

aactacaaag gttgctgtag gagataagat attgaagtag tgctaagtgc ctaacacctg 60

cagtgaacaa tggcctctgc atcagcatct cttctcaagt cttcacttgt tcttgacaag 120

tctgagtggg tgaagggaca aacacttcgc caaccttctg ctgcatcagt tgtgagatgc 180

aaccccacca ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt 240

aag 243

<210> 2047
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2047

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg 180

caaccccacc accccatcag gcctcacaat cagagctggt tcctatgctg atgagctcgt 240

taaga 245

<210> 2048
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2048

gcaactacaa aggttgctgt aggagataag atattgaagt agtgctaagt gcctaacacc 60

tgcagtgaac aatggcctct gcatcagcat ctcttctcaa gtcttcactt gttcttgaca 120

agtctgagtg ggtgaaggga caaacacttc gccaaccttc tgctgcatca gttgtgagat 180

gcaaccccac caccccatca ggcctcacaa tcagagctgg ttcctatggc tgatgagctc 240

gttaagaccg cgaaaacagt ggcttcacca ggg 273

<210> 2049
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2049

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgcctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaaggg acaaacactt cgccaacctt ctgctgcatc agttgtgaga 180

tgcaacccca ccaccccatc aggcctcaca atcagagctg gttcctatgc tgatgagctc 240

gttaa 245

<210> 2050
<211> 263
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (221),(235)
<223> unsure at all n locations

<400> 2050

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgcctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaaggg acaaacactt cgccaacctt ctgctgcatc agttgtgaga 180

tgcaacccca ccaccccatc aggcctcaca atcagagctg nttcctatgc tgatncagct 240

cgttaagacc gcgaaaacag tgg 263

<210> 2051
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2051

gcatacaact acaaaggttg ctgtaggaga taagatattg aagtagtgct aagtgcctaa 60

cacctgcact gaacaatggc ctctgcatca gcatctcttc tcaagtcttc acttgttctt 120

gacaagtctg agtgggtgaa gggacaaaca cttcgccaac cttctgctgc atcagttgtg 180

agatgcaacc ccaccacccc atcaggcctc accatcagag ctggttccta tgctgatgag 240

ctcgt 245

<210> 2052
<211> 220
<212> nucleic acid
<213> Glycine max

<400> 2052

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcaccat cagagctggt tcctatgctg 220

<210> 2053
<211> 221
<212> nucleic acid
<213> Glycine max

<400> 2053

cggctcgagg ttgctgtagg agataagatt gcagtagtgc taagtgctaa cacctgcagt 60

gaacaatggc ctctgcatca gcatctctgc tcaagtcttc acttgttctt gacaagtctg 120

agtgggtgaa gggacaaacc cttcgccaac cttctgcatc agttgtgaga tgcaacccca 180

ccaccccatc aggcctcacc atcagagctg gttcctatgc t 221

<210> 2054
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2054

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctagtggg tgaagggaca aacacttcgc caaccttctg ctgcatcagt tgtgagatgc 180

aaccccacca ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt 240

aagaccgcga aaacag 256

<210> 2055
<211> 288
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (157),(242)...(243)
<223> unsure at all n locations

<400> 2055

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgcctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaaggg acaaacactt cgccaanctt ctgctgcatc agttgtgaga 180

tgcaacccca ccaccccatc agggccttca ccatcagagc tggttcccta tgctgatgag 240

cnncgttaag accgcgaaaa cagtggcttc accagggagg ggtatttc 288

<210> 2056
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2056

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgcctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaaggg acaaacactt cgccaacctt ctgctgcatc agttgtgaga 180

tgcaacccca ccaccccatc aggcctcacc atcagagctg gttcctatgc tgatga 236

<210> 2057
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 2057

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac attcacttcg ccaaccttct gctgcatcag ttgtgagatg 180

caaccccacc accccatcag gcctcacaat cagagctggt tcctatgctg atgagctcgt 240

<210> 2058
<211> 254
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (163),(185),(214),(218),(222),(231),(238)
<223> unsure at all n locations

<400> 2058

acaactacaa aggttgctgt aggagataag atattgaagt agtgctaagt gcctaacacc 60

tgcagtgaac aatggcctct gcatcagcat ctcttctcaa gtcttcactt gttcttgaca 120

agtctgagtg ggtgaaggga caaacacttc gccaaccttc tgncgcatca gttgtgagat 180

gcaancccaa caacccattc aggcctcaaa atcngagntg gntcctatgc ngatgagntc 240

ggcaagaccg cgaa 254

<210> 2059
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2059

acaactacaa aggttgctgt aggagataag atattgaagt agtgctaagt gcctaacacc 60

tgcagtgaac aatggcctct gcatcagcat ctcttctcaa gtcttcactt gttcttgaca 120

agtctgagtg ggtgaaggga caaacacttc gccaaccttc tgctgcatca gttgtgagat 180

gcaaccccac caccccatca ggcctcacca tcagagctgg ttcctatgct gatgagctcg 240

ttaagaccgc gaaaacagtg 260

<210> 2060
<211> 224
<212> nucleic acid
<213> Glycine max

<400> 2060

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcttcaccat cagagctggt tgctatgctg atga 224

<210> 2061
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2061

tacaaaggtt gctgtaggag ataagatatt gaagtagtgc taagtgccta acacctgcag 60

tgaacaatgg cctctgcatc agcatctctt ctcaagtctt cacttgttct tgacaagtct 120

gagtgggtga agggacaaac acttcgccaa ccttctgctg catcagttgt gagatgcaac 180

cccaccaccc catcaggcct caccatcaga gctggttcct atgctgatga gctcgttaa 239

<210> 2062
<211> 220
<212> nucleic acid
<213> Glycine max

<400> 2062

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctcaccatca gagctggttc ctatgctgat 220

<210> 2063
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2063

atacaaaggt tgctgtagga gataagattg cagtagtgct aagtgctaac acctgcagtg 60

aacaatggcc tctgcatcag catctctgct caagtcttca cttgttcttg acaagtctga 120

gtgggtgaag ggacaaaccc ttcgccaacc ttctgcatca gttgtgagat gcaaccccac 180

caccccatca ggcctcacca tcagagctgg tccctatgct gatgagc 227

<210> 2064

<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2064

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgcaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtaagggaca aacacttcgc caaccttctg ctgcatcagt tgtgagatgc 180

aaccccacca ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgta 240

gaccgcgaaa ac 252

<210> 2065
<211> 265
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (37),(202),(226),(246)...(247),(258)
<223> unsure at all n locations

<400> 2065

caaaggttgc tgtaggagat aagattgcag tagtgcncag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca acccccacca 180

ccccatcagg gcctcaccat cngagctggt tctatgctga tgagcncgtt aaagaccgcg 240

gaaacnntgg gtttcacnag ggggg 265

<210> 2066
<211> 194
<212> nucleic acid
<213> Glycine max

<400> 2066

caaaggttgc tgtaggagat aagaatgcag tagtgctaag tcctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgagatgca accccaccac 180

cccatcaggc ctca 194

<210> 2067
<211> 191
<212> nucleic acid
<213> Glycine max

<400> 2067

ctcatacaaa ggttgctgta ggagataaga ttgcagtagt gctaagtgct aacaggtgca 60

gtgaacaatg gcctctgcat cagcatctct gctcaagtct tcacttgttc ttgacaagtc 120

tgagtgggtg aagggacaaa cccttcgcca accttctgca tcagttgtga gatgcaaccc 180

caccacccca t 191

<210> 2068
<211> 189
<212> nucleic acid
<213> Glycine max

<400> 2068

catacaaagg ttgctgtagg agataagatt gcagtagtgc taagtgctaa cacctgcagt 60

gaacaatggc ctctgcatca gcatctctgc tcaagtcttc acttgttctt gacaagtctg 120

agtgggtgaa gggacaaacc cttcgccaac cttctgcatc agttgtgaga tgcaacccca 180

ccaccccat 189

<210> 2069
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2069

ctacaaaggt tgctgtagga gataagatat tgaagtagtg ctaagtgcct aacacctgca 60

gtgaacaatg gcctctgcat cagcatctct tctcaagtct tcacttgttc ttgacaagtc 120

tgagtgggtg agggacaaac acttcgccaa ccttctgctg catcagttgt gagatgcaac 180

cccaccaccc catcaggcct cacaatcaga gctggttcct atgctgatga gctcgt 236

<210> 2070
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2070

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggca aacacttcgc caaccttctg ctgcatcagt tgtgagatgc 180

aaccccacca ccccatcagg cctcaccatc agagctggtt cctatgctga tgagctcgtt 240

aaga 244

<210> 2071
<211> 130
<212> nucleic acid
<213> Glycine max

<400> 2071

gtgctaagtg ctaacacctg cagtgaacaa tggcctctgc atcagcatct ctgctcaagt 60

cttcacttgt tcttgacaag tctgagtggg tgaagggaca aacccttcgc caaccttctg 120

catcagttgt 130

<210> 2072
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2072

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgcctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaaggg acaaacactt cgccaacctt ctgctgcatc agttgtgaga 180

tgcaacccca ccaccccatc aggcctcacc atcagagctg gttcctatgc tgatgagctc 240

gttaagaccg cgaaaacagt 260

<210> 2073
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2073

tcggattctg ctcgaggtga acaatggcct ctgcatcagc atctcttctc aagtcttcac 60

ttgttcttga ctagtttgag tgcgtgaagg gacaaacact tcgccaacct tctgctgcat 120

cagttgtgag atgcaacccc accactcctt caggcctcac catcagagct gtttcctatg 180

ctgatgagct ctttaagacc gcgaaaacag tggcttcacc tcggaggggt attttggcca 240

tgtctgagtc cactgctccc tgttcgaag 269

<210> 2074
<211> 197
<212> nucleic acid
<213> Glycine max

<400> 2074

aaaggttgct gtaggagata agatattgaa gtagtgctaa gtgcctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctcttctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaacact tcgccaacct tctgctgcat cagttgtgag atgcaacccc 180

accaccccat caggcct 197

<210> 2075
<211> 165
<212> nucleic acid
<213> Glycine max

<400> 2075

caaaggttgc tgtaggagat aagattgcag tagtgctaag tgctaacacc tgcagtgaac 60

aatggcctct gcatcagcat ctctgctcaa gtcttcactt gttcttgaca agtctgagtg 120

ggtgaaggga caaacccttc gccaaccttc tgcatcagtt gtgag 165

<210> 2076
<211> 192
<212> nucleic acid
<213> Glycine max

<400> 2076

ctacaaaggt tgctgtagga gataagatat tgaagtagtg ctaagtgcct aacacctgca 60

gtgaacaatg gcctctgcat cagcatctct tctcaagtct tcacttgttc ttgacaagtc 120

tgagtgggtg aagggacaaa cacttcgcca accttctgct gcatcagttg tgagatgcaa 180

ccccaccacc cc 192

<210> 2077
<211> 189
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (26),(73),(179)
<223> unsure at all n locations

<400> 2077

caactacaaa ggttgctgta ggaganaaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atngcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagang 180

caaccccac 189

<210> 2078
<211> 197
<212> nucleic acid
<213> Glycine max

<400> 2078

ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct gcagtgaaca 60

atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa gtctgagtgg 120

gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg caaccccacc 180

accccatcag gcctcac 197

<210> 2079
<211> 199
<212> nucleic acid
<213> Glycine max

<400> 2079

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg 180

caaccccacc accccatca 199

<210> 2080
<211> 170
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (41)
<223>

<400> 2080

caactacaaa ggttgctgta ggagataaga tattgaagta ntgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag 170

<210> 2081
<211> 273
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (228)
<223>

<400> 2081

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggaa aacacttcgc caaccttctg ctgcatcagt tgtgagatgc 180

aaccccacca ccccatcagg cctcacaatc agagctgcct cctatgcnga tgagctcgtt 240

aagaccgcga aaacagtggc ttcaccaggg agg 273

<210> 2082
<211> 272
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (53)
<223>

<400> 2082

tacaactaca aaggttgctg taggagataa gatattgaag tagtgctaag tgnctaacac 60

ctgcagtgaa caatggcctc tgcatcagca tctcttctca agtcttcact tgttcttgac 120

aagtctgagt gggtgaagga caaacacttc gccaaccttc tgctgcatca gttgtgagat 180

gcaaccccac caccccatca ggcctcacca tcagagctgg ttcctatgct gatgagctcg 240

ttaagaccgc gaaaacagtg gcttcaccag gg 272

<210> 2083
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2083

caactacaaa ggttgctgta ggagataaga tattgaagta gtgctaagtg cctaacacct 60

gcagtgaaca atggcctctg catcagcatc tcttctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacacttcg ccaaccttct gctgcatcag ttgtgagatg 180

caaccccacc accccatcag gcctcagcat cagagctggt tcctatgctg atgagctcgt 240

taagaccgcg aaaacagtgg cttcacca 268

<210> 2084
<211> 153
<212> nucleic acid
<213> Glycine max

<400> 2084

acaaaggttg ctgtaggaga taagattgca gtagtgctaa gtgctaacac ctgcagtgaa 60

caatggcctc tgcatcagca tctctgctca agtcttcact tgttcttgac aagtctgagt 120

gggtgaaggg acaaaccctt cgccaacctt ctg 153

<210> 2085
<211> 222
<212> nucleic acid
<213> Glycine max

<400> 2085

ctcgagccga atcggctcga gcgggctcga gcaacgtaca aaggttacgc tttaggagat 60

aagatattgt agtagtgcta agtgcctagc acttgcagtg aacaatggcc tctgcatcag 120

catctcttct caagtcttca cttgttcttg acaagtctga gtgggtgaag ggacaaacac 180

ttcgccaacc ttctgctgca tcagttgtga gatgcaaccc ca 222

<210> 2086
<211> 188
<212> nucleic acid
<213> Glycine max

<400> 2086

atacaactac aaaggttgct gtaggagata agatattgaa gtagtactaa gtgcctaaca 60

cctgcagtga acaatggcct ctgcatcagc atctcttctc aagtcttcac ttgttcttga 120

caagtctgag tgggtgaagg gacaaacact tctccaacct tctgctgcat cagttgtgag 180

atgcaacc 188

<210> 2087
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2087

ctcgagccgc aaaggttgct gtaggagata agattgcagt agtgctaagt gctaacacct 60

gcagtgaaca atggcctccg gctcagcatc tctgctcaag tcttcacttg ttcttgacaa 120

gtctgagtgg gtgaagggac aaacccttcg ccaaccttct gcatcagctg tgagatgcaa 180

ccccaccacc ccatcaggcg tcaccatcag agctggttcc tatgctg 227

<210> 2088
<211> 106
<212> nucleic acid
<213> Glycine max

<400> 2088

tgaacaagtt ggaggtgttg aagccatgga ctctctcatt ctcattcggg cgagcactgc 60

aacaaagcac actcaagaca tggggtggaa agaaggagaa tgtcgc 106

<210> 2089
<211> 278
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (82),(257)
<223> unsure at all n locations

<400> 2089

gacgacgcgt caatatggca tggccagata cgctgtcata tgccagaaaa agggctgggt 60

ccattgttga gcctgagatc cntgttgatg gatctcatga cattcacaag tgtgctgccg 120

tcaccgaacg tgtccctgca gcatgctaca aagctttgaa tgatcaccac gtccttcttg 180

aggggtacct attgaagcca aacatggtca cccccgggat caaatctgct aagggttccc 240

ctcaggttgg tgcggancac aacggttaaa gcccttca 278

<210> 2090
<211> 338
<212> nucleic acid
<213> Glycine max

<400> 2090

agtacggctg cgagaagacg acagaagggg gttcactttc ttccaacctc taacctacct 60

ctttttcttc tctctcaaca acttcaactt cttcctcctc gattaagttc caatttaaag 120

gcaaattaca agattaacct aaccgcaaaa ccgccttcaa ttggaatccc tgaaaagggt 180

attcttcctg ccgataattc aacagggaca attggcaacc ttttggccag catcattgta 240

aaaacaattg aatccaacag gcaagctctt agggagctgc ttttcattgc tcctgatgtt 300

cttcaatatc tcattggtgt catcctcttt aaggaaac 338

<210> 2091
<211> 369
<212> nucleic acid
<213> Glycine max

<400> 2091

gatgagctta ttgcgaatgc tgcttacatt ggcactcctg gaaagggtat tcttgctgct 60

gatgagtcaa cagggacaat tggcaagcgt ttggccagca tcagtgtaga gaatgttgaa 120

tccaacaggc gtgctcttag ggagctgctt ttcaccgctc ccggtgctct taaatatctc 180

agtggtgtca tcctctttga ggaaactctc taccagagca cagctgcagg caagcccttt 240

gtggaagtct tgaaggaggc tggtgtgctt cctggcatca aggttgacaa gggcacagtt 300

gagcttgctg gcactaatgg agaaaccacc actcagggtc tagatggcct tggtcagcgt 360

tgcgccaag 369

<210> 2092
<211> 432
<212> nucleic acid
<213> Glycine max

<400> 2092

agacggctgc gagaagacga cagaaggggg ttcactttct tccaacctct aacctacctc 60

tttttcttct ctctcaacaa cttcaccttc ttcctcctcg atcatgtctc acttcaaggg 120

caagtaccat gatgagctta tcgccaatgc tgcgtacatt ggcactcctg gaaagggtat 180

tcttgctgct gatgagtcaa cagggacaat tggcaagcgt ttggccagca tcagtgtaga 240

gaacattgaa tccaacaggc gagctcttag ggagctgctt ttcactgctc ctggtgttct 300

tcaatatctc agtggtgtca tcctctttga ggaaaccctc taccagagca cagctgcagg 360

caagcccttt gtgaatgtct tgaacgaagc tggtgtgctt cctggcatca aggttgacaa 420

gggcacagtc ga 432

<210> 2093
<211> 379
<212> nucleic acid
<213> Glycine max

<400> 2093

ctacctcttt ctcttctatc tcaacaacta caccttcttg ctactggatc atgtctcgag 60

ttcaagggca agtaccatga tgagcttatc gccaatgctg cgtacattgg cactcctgga 120

aagggtattc ttgctgctga tgagtcaaca gggacaattg gcaagcgttt ggccagcatc 180

agtgtagaga acattgaatc caacaggcga gctcttaggg agctgctttt cactgctcct 240

ggtgttcttc aatatctcag tggtgtcatc ctctttgagg aaaccctcta ccagagcaca 300

gctgcaggca agccctttgt gaatgtcttg aaagaagctg gtgtgcttcc tggcatcaag 360

ggtgacaagg gcacagtcg 379

<210> 2094

<211> 411
<212> nucleic acid
<213> Glycine max

<400> 2094

acctacctct ttttcttctc tctcaacaac ttcaccttgg tcctcctcga tcatgtctca 60

cttcaagggc aagtaccatg atgagcttat cgccaatgct gcgtacattg gcactcctgg 120

aaagggtatt cttgctgctg atgagtcaac agggacaatt ggcaagcgtt tggccagcat 180

cagtgtagag aacattgaat ccaacaggcg agctcttagg gagctgcttt tcactgctcc 240

tggtgttctt caatatctca gtggtgtcat cctctttgaa gaaaccctct accagagcac 300

agctgcaggc aagccctttg tgaatgtctt gaaagaagct ggtgtgcttc ctggcatcaa 360

ggttgacaag ggcacagtcg agcttgctgg aactaatgga gaaaccacca c 411

<210> 2095
<211> 446
<212> nucleic acid
<213> Glycine max

<400> 2095

aaaaacccta cttggctctt ttcttcactt gttcactttc ttccaacctc taacctacct 60

ctttttcttc tctctcaaca acttcacctt cttcctcctc gatcatgtct cacttcaagg 120

gcaagtacca tgatgagctt atcgccaatg ctgcgtacat tggcactcct ggaaagggta 180

ttcttgctgc tgatgagtca acagggacaa ttggcaagcg tttggccagc atcagtgtag 240

agaacattga atccaacaag ccaactctta aggagctgct tttcactgct cctggtgttc 300

ttcaatatct cagtggtgtc atcctctttg aggaaaccct ctaccagagc acagctgcag 360

gcaagccctt tgtgaatgtc ttgaaggaag ctggtgtgct tcctggcatc aaggttgaca 420

agggcacagt cgagcttgct ggaact 446

<210> 2096
<211> 418
<212> nucleic acid
<213> Glycine max

<400> 2096

ctctaaccta cctctttttc ttctctctca acaacttcac cttcttcctc ctcgatcatg 60
agggcaagta ccatgatgag cttatcgcca atgctgcgta cattggcact 120

cctggaaagg gtattcttgc tgctgatgag tcaacaggga caattggcaa gcgtttggcc 180

agcatcagtg tagagaacat tgaatccaac aggcgagctc ttagggagct gcttttcact 240

gctcctggtg ttcttcaata tctcagtggt gtcatcctct ttgaggaaac cctctaccag 300

agcacagctg caggcaagcc ctttgggaat gtcttgaagg aaacctgtgt gctttcttgc 360

attaaaggtt gacaagggca cagtcgagct tgctggaact aatggagaaa ccaccact 418

<210> 2097
<211> 417
<212> nucleic acid
<213> Glycine max

<400> 2097

agcacactgt cagagccctt cagagaaccg tgcctgctgc agttcctgct gtcgttttct 60

tgtctggtgg ccagagtgag gaggaggcat ccgtcaacct caacgccatt aaccaggtca 120

atgggaagaa gccatggtca ctctctttct cctttggaag ggcacttcaa cagagcaccc 180

ttaaggcatg gggcggaaaa gaagagaatg tgaagaaggc tcaggaagcc cttttggtaa 240

gagccaaggc taactcagag gcaactctgg gaacctacaa gggtaactca cagcttgctg 300

atggtgcctc agagagcctc catgtttcga actacagcta ctgatcaatc gaagttggtg 360

ttgtttgaag agactagtgc gagtaggaaa tcgtattatg ggtacaacaa ccgaatt 417

<210> 2098
<211> 404
<212> nucleic acid
<213> Glycine max

<400> 2098

acggctgcga gaagacgaca gaaggggggtt cactttcttc caacctctaa cctacctctt 60

tttcttctct ctcaacaact tcaccttctt cctcctcgat catgtctcac ttcaagggca 120

agtaccatga tgagcttatc gccaatgctg cgtacattgg cactcctgga aagggtattc 180

ttgctgctga tgagtcaaca gggacaattg gcaagcgttt ggccagcatc agtgtagaga 240

acattgaatc caacaggcga gctcttaggg agctgctttt cactgctcct ggtgttcttc 300

aatatctcag tggtgtcatc ctctttgagg aaaccctcta ccagagcaca gctgcaggca 360

agccctttgt gaatgtcttg aaggaagctg gtgtgcttcc tggc 404

<210> 2099
<211> 356
<212> nucleic acid
<213> Glycine max

<400> 2099

ctacctcttt ttcttctctc tcaacaactt caccttcttc ctcctcgatc atgtctcact 60

tcaagggcaa gtaccatgat gagcttatcg ccaatgctgc gtacattggc actcctggaa 120

agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca 180

gtgtagagaa cattgaatcc aacaggcgag ctcttaggga gctgcttttc actgctcctg 240

gtgttcttca atatctcagt ggtgtcatcc tctttgagga aaccctctac cagagcacag 300

ctgcaggcaa gccctttgtg aatgtcttga aggaagctgg tgtgcttcct ggcatc 356

<210> 2100
<211> 369
<212> nucleic acid
<213> Glycine max

<400> 2100

ctcgagccga atcggctcga gaacctacct gtttttcttc tctctcaaca acttcacctt 60

cttcctcctc gatcatgtct cacttcaagg gcaagtacca tgatgagctt atcgccaatg 120

ctgcgtacat tggcactcct ggaaagggta ttcttgctgc tgatgagtca acagggacaa 180

ttggcaagcg tttggccagc atcagtgtag agaacattga atccaacagg cgagctctta 240

aggagctgct tttcactgct cctggtgttc ttcaatatct cagtggtgtc atcctctttg 300

aggaaaccct ctaccagagc acagctgcag gcaagccctt tgtgaatgtc ttgaaggaag 360

ctggtgtgc 369

<210> 2101
<211> 390
<212> nucleic acid
<213> Glycine max

<400> 2101

acggctgcga gaagacgaca gaaggggact tgttcacttt cttccaacct ctcaagtcca 60

acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc atgtctcact 120

tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc actcctggaa 180

agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg gccagcatca 240

gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc accgctcccg 300

gtgctcttaa atatctcagt ggtgtcatcc tctttgagga aactctctac cagagcacag 360

ctgcaggcaa gccctttgtg gaagtcttga 390

<210> 2102
<211> 427
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (191),(337)
<223> unsure at all n locations

<400> 2102

cacgcgtcca gctattcctc cctcctcaca aacttcactt tcttcttctt cattaatgtc 60

tcacttcaag ggcaagtacc atgatgagct tatcgcaaat gctgcgtaca ttggcactcc 120

tggaaagggt attcttgctg ctgatgagtc aacagggaca attggcaagc gtttggccag 180

catcagtgta nagaacattg aatccaacat gcgagctctt agggagctgc ttttcactgc 240

tcctggtgtt cttcaatatc tcagtggtgt catcctcttt gaggaaaccc tctaccagag 300

cacagctgca tgcaagccct ttgtgaatgt cttgaangaa gctggtgtgc ttcctggcat 360

caatgttgac aagggcacag tcgagcttgc tggaactaat ggagaaaaca ccactcatgg 420

tctagat 427

<210> 2103
<211> 392
<212> nucleic acid
<213> Glycine max

<400> 2103

caacctctaa cctacctctt tttcttctct ctcaacaact tcaccttctt cctcctcgat 60

catgtctcac ttcaagggca agtaccatga tgagcttatc gccaatgctg cgtacattgg 120

cactcctgga aagggtattc ttgctgctga tgagtcaaca gggacaattg gcaagcgttt 180

ggccagcatc agtgtagaga acattgaatc caacaggcga gctcttaggg agctgctttt 240

cactgctcct ggtgttcttc aatatctcag tggtgtcatc ctctttgagg aaaccctcta 300

ccagagcaca gctgcaagga aacccсttgg tgaaggtctt gaaggaagct ggtgtgcttc 360

ctgccatcaa ggttgacaag ggcacagtcg ag 392

<210> 2104
<211> 370
<212> nucleic acid
<213> Glycine max

<400> 2104

cccacgcgtg cgcccacgcg tacgcctacc tatttttctt ctctctcaac agcttcaggt 60

tcttcctcct cgatcatgtc tcacttcaag ggcaagtacc atgatgagct tatcgccaat 120

gctgcgtaca ttggcactcc tggaaagggt attctcgctg ctgatgagtc aacaggaca 180

attggcaagc gtttggccag catcagtgta cagaacattg aatccaacag gcgagctctt 240

agggagctgc ttttcactgc tcctggtgtt cttgaatatc tcagtggtgt catcctgttt 300

gaggaaaccc tttaccagag cacagctgca ggcaagccct ttgtgaatgt cttgaaagaa 360

gctggtgtgc 370

<210> 2105
<211> 405
<212> nucleic acid
<213> Glycine max

<400> 2105

ctcaagtcca acctacccct ttttcttctc ccaccaactt caccgtcttc ttcctcgatc 60

atgtctcact tcaagggcaa gtaccatgat gagcttattg ccaatgctgc ttacattggc 120

actcctggaa agggtattct tgctgctgat gagtcaacag ggacaattgg caagcgtttg 180

gccagcatca gtgtagagaa tgttgaatcc aacaggcgtg ctcttaggga gctgcttttc 240

accgctcccg gtgctcttaa atatctcagt ggtgtcatcc tctttgagga aactctctac 300

caaagcacag ctgcaggcaa ccccttgtgg aagtcttgaa ggaggctggt gtgcttcctg 360

gcatccaagt tgacaagggc acagtttgag cttgctggca ctaat 405

<210> 2106

<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2106

ctcaagtcca acctacccct ttttcttctc ccacgcaact tgaccgtctt cttcctcgat 60

catgtctcac ttcaagggca agtaccatga tgagcttatt gccaatgctg cttacattgg 120

cactcctgga aagggtattc ttgctgctga tgagtcaaca gggacaattg gcaagcgttt 180

ggccagcatc agtgtagaga atgttgaatc caacaggcgt gctcttatgg agctgctttt 240

caccgctccc ggtgctctta aatatctcag tggtgt 276

<210> 2107
<211> 401
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (241)
<223>

<400> 2107

aagtgtgtct gagcctgacg tcgtagctat tgcatcactc tataagagct atgacgcacg 60

ctgacctaag cccgggattc gggttcggga tgggccccaa cgagccttct gagctgtcta 120

tccatgagaa cgcctatggc ttggctagat acgctgtcat atgccatgag aatggcctgg 180

ttcccattgt tgagcctgag atccttgttg atggacctca tgacattcac aagtgtgccg 240

ncgtcaccga gcgtgtcctt gcagcatgct acaaggcttt gaatgatcac catgtccttc 300

ttgagggtac cctattgaag ccaaacatgg tcacccctgg atcccaatct gctaaggttt 360

tccctcatgt ggttgccgag cacactgtca gagcccttca g 401

<210> 2108
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2108

gacccacgcg tccgcgcact cgtccgtacg gctgcgagaa gacgacagaa gggtacggct 60

gcgagaagag gacagaatgg tacggctgcg agaagacgac agaaggatac ggctgcgaga 120

agacgacaga agggtacggc tgcgagaaga cgacagaagg ggaccgagcg cgttcttgca 180

gcatgctaca aggctctaaa tgatcaccat gttctgcttg agggcactct gttgaagccc 240

aacatggtca cccctggttc aaagtctaag aaggtcaccc cagatgtgat tgctcaatac 300

actgttaca 309

<210> 2109
<211> 215
<212> nucleic acid
<213> Glycine max

<400> 2109

catggcgcgg aaaagaagag attgtgaaga aggctcagga agccctttg gtaagagcca 60

aggctaactc agaggcaact ctgggaacct acaagggtaa ctcacagctt gctgatggtg 120

cctcagagag cctccatgtt tcgaactaca gctactgatc aatcgaagtt ggtgttgttt 180

gaagagacta gtgcgagtag gaatcggtat tatgg 215

<210> 2110
<211> 428
<212> nucleic acid
<213> Glycine max

<400> 2110

aaccgttgtc ttctcacttc gtcaaaacca accaaacccc tccccaattc tcaagccaac 60

cagggtcttc cttcaagagc aagtaccaag atgaactcat tgccaatgct gcttacattg 120

gcaccccagg gaagggtatc cttgctgctg atgagtcaac tggtacaatt ggcaagcgat 180

tggccagcat taatgtcgag aatgttgaag caaataggcg tgctcttcgt gaactcctat 240

tcaccacacc tggtgctttt gagtgcctca gtggtgtgat cttgtttgaa gaaaccctat 300

accaaaagac agcttcagga aaacccttcg tagagttgat gaaggaaaga ggagttctcc 360

ctggtatcaa ggttgacaag ggcacagtag agcttgcagg aactaatggg gagactacta 420

cttaaagg 428

<210> 2111
<211> 373
<212> nucleic acid
<213> Glycine max

<400> 2111

tacggctgcg agaagacgac agaaggggac actccctttt taaaaccgtt gtcttctcac 60

ttcgtcaaaa ccaacgaggg gcgtccccaa gtctcaagcc aaccatgtct tccttcaaga 120

gcaagtacca ggatgaactc attgccaatg ctgcttacat tggcacccca gggaagggta 180

tccttgcggc tgatgagtca actggtacaa gtcgcaagcg attggccagc attaatgtcg 240

agaatgttga agcaactagg cgtgctcttc gtgaactcgg attcagcaca cctggtgctt 300

ttgagtgcct cagtggtgtg atcttgtctg acgaaaccct atgccaggag acagcttcag 360

gaaaaccctt cgt 373

<210> 2112
<211> 370
<212> nucleic acid
<213> Glycine max

<400> 2112

tacaaaggtt gctgtaggag ataagattgc agtagtgcta agtgctaaca cctgcagtga 60

acaatggcct ctgcatcagc atctctgctc aagtcttcac ttgttcttga caagtctgag 120

tgggtgaagg gacaaaccct tcgccaacct tctgcatcag ttgtgagatg caaccccacc 180

agcccatcag gcctcaccat cagagctggt tcctatgctg atgagctcgt taagaccgcg 240

aaaacagtgg cttcaccagg gaggggtatt ttggccatgg atgagtccaa tgctacctgt 300

gggaagcgtt tggcttcaat tgggctagag aacactgaag ctaaacgcca ggcataccgt 360

tacctcctcg 370

<210> 2113
<211> 418
<212> nucleic acid
<213> Glycine max

<400> 2113

agataagatt gcagtactgc taagtgctaa cacctgcaat gaacaatggc ctctgcatca 60

gcatctctgc tcaagtcgtc acttgttctt gacaagtctg agtgggtgaa gggacaaacc 120

cttcgccaac cttctgcatc agttgtgaga tgcaacccca ccaccccatc aggcctcagc 180

atcagagctg gttcctatgc tgatgagctc gttaagaccg cgaaaacagt ggcttcacca 240

gggaggggta ttttggccat ggatgactcc aatgctacct gtgggaagcg tttggcttca 300

attgggctat agaacactga agctaaccgc catgcatagc gtaccctcct cgtgacagtt 360

ccaggccttg gtcagtacat ctctggtgcc attctctttg aggaaacact ctaacaat 418

<210> 2114
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2114

ctcgagccac tcgagccgct aaaaactggg atgaccctac taccaagtat gtggagaaat 60

gcaagtatac caagagatgg ttcatcacca aagtccctaa gatatattgg aagcatggta 120

gctgatgttc accgcacatt gctttatgga ggtatttttc tgtatccggc tgataaaaag 180

agtccaaatg gaaaacttcg tgtactctat gaagtcttcc caatgtcatt cttgatggaa 240

caagcaggag gacaggcttt cactggc 267

<210> 2115
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2115

agaagagaag tggatatgag cttcaaacac tcactaactg gatgctgaag caggagcaag 60

ctggggtgat tgatgcagaa ctcactattg tgctgtctag catttccatg gcgtgcaatc 120

agattgcttc tttggtgcaa agagccaaca tttccaacct cactggggtt caaggagctg 180

tcaatgttca gggggaagac cagaaaaagc ttgatgttgt ttcaaatgag gtcttctcat 240

actgcttgag gtcaagtggg aggacaggga t 271

<210> 2116
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2116

gaaatgccaa aaactgggat cgtcctactg ctacttacgt tgaaaaatgc aagtttcctg 60

aagatggttc atcaccaaag tctctaagat atattcggaa gtatgggtag ctgatgttca 120

tcgtacgttg ctttatggag gcatcttttt gtaccctgtt gacaaaaaaa gtccaaatgg 180

aaaacttcgt gtcctgtatg aagtcttccc aatgtcattc ttgatggaac aggcaggagg 240

acagtctttc acgggcaagg a 261

<210> 2117
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2117

atcaagtggc aggagaaggc atgtgggggg ttctggagtt aggtgcatgg ctgtggggga 60

agcagcaacc actgggacaa agaagagaag tggatatgag cttcaaacac tcactagctg 120

gttgctgaag caggagcaag ctggggtgat tgatgcagaa ctcactattg tgctgtctag 180

catttccatg gcatgcaaac agattgcttc tttggtgcaa agagctaaca tttccaacct 240

cactggggtt caaggtg 257

<210> 2118
<211> 271
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (212)...(214)
<223> unsure at all n locations

<400> 2118

gaagtataac tgcttacttt ccctcaaaat gatactttaa tctaagtatt ttatctaaat 60

aaattctata gccctgaccg gcacatcaac caaagtctct aagatatatt ggaagcatgg 120

tagctgatgt tcatcgtacg ttgctttatg gaggcatctt tttgtaccct gctgacaaaa 180

aaagtccaaa tggaaaactt cgtgtcctgt annnagtctt cccaatgtca ttcttgatgg 240

aacaggcagg aggacagtct ttcacgggca a 271

<210> 2119
<211> 291
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (86),(91),(102),(154),(171),(176),(189),(192),(208),
(225),(228),(234),(240),(245),(247),(253),(258),(283)
<223> unsure at all n locations

<400> 2119

gagcaggcaa aatttatgct ttcaatgaag ggacttatcc agttgtggga tgacaagctt 60

aagaaatata ttgatgatct caaggnccca ngtcctagcg gnaagcctta ttctgcaagg 120

tacattggta gcttggtagg agacttccac aggnccactg ctatatggtg ncattnatgg 180

gtaccccang gnccaagcca aagtaacnat gggcaattca agctncanta ggangggccn 240

ccatnanctt ccntattngc cccggctggg ggaaaaggtc ccntgccccc c 291

<210> 2120
<211> 258
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (154),(182),(200),(213),(216),(220),(229),(231),(233),
(241),(243),(245),(247),(251),(255)
<223> unsure at all n locations

<400> 2120

gtgaacgtgt gccaacccgg aagcaacctt cttgcagctg gttactgcat gtattctagc 60

tccaataatc tttgttctca cccttgggaa tggagtgttt gtgtttacat tggacccgat 120

gtatggcgaa ttcgttttga ctcaggaaaa cctncaaata cctagagcag gcaaaattta 180

tnctttcaat gaagggaatn atcattgtgg ganccncacn taaggaaant ntntggacaa 240

ncnangnccc ncgcnccc 258

<210> 2121
<211> 157
<212> nucleic acid
<213> Glycine max

<400> 2121

atggtagctg atgttcatcg tacgttgctt tatggaggca tctttttgta ccctgctgac 60

aaaaaaagtc caaatggaaa acttcgtgtc ctgtatgaag tcttcccaat gtcattcttg 120

atggaacagg caggaggaca gtctttcacg ggcaagg 157

<210> 2122
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2122

tcacagtgcc gatgctcaac gcacggactt gatgaccatc acccgcttcg tgctgaacca 60

acaatccaac caccctgagt ctcgtggcga tttctcaatc ttgctcagtc acattgttct 120

cggttgcaag ttcctctgct ctgctgttaa caaggcgggt cttgctaagc ttattggact 180

tgcaggagag acaaatgttc agggcgaaga gcaaaagaaa ctggatgtcc tttccaatga 240

tgtctttatc aaggctttgg tc 262

<210> 2123
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2123

ggatcacagt gccgatgctc aacgcacgga cttgatgacc atcacccgct tcgtgctgaa 60

ccaacaatcc aaccaccctg agtctcgtgg cgatttctca atcttgctca gtcacattgt 120

tctcggttgc aagttcctct gctctgctgt taacaaggcg ggtcttgcta agcttattgg 180

acttgcagga gagacaaatg ttcaggggaa gagcaaaaga aactggatgt cctttccaat 240

g 241

<210> 2124
<211> 261
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (61),(68),(90),(248)
<223> unsure at all n locations

<400> 2124

acatacaccc acatatttca tatgggtact tgttaatttg ggtgtggatt gttggtttgt 60

nacttgtntt gttccgttca ggtgattgtn tgattgagcc ttgaagaaat ggaccacagc 120

gctgatgcac atcgcacgga cttgatgacc ataacgcggt tcgtgctgaa cgagcaatcc 180

aagcaccccg agtcacgcgg cgatttcacc atcttgctca gtcacattgt tctcggttgc 240
aagttcgntt gttccgctgt c 261

<210> 2125
<211> 258
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (84)
<223>

<400> 2125

ttattatact ttcttcttct tctttattat tgttgattaa tataacatac acccacatat 60

ttcatatggg tacttgttaa tttnggtgtg gattgttagt ttgttacttg tttgttccgt 120

tcaggtgatt gtttgattga gccttgaaga aatggaccac agcgctgatg cacatcgcac 180

ggacttgatg accataacgc ggttcgtgct gaacgagcaa tccaagcacc ccgagtcacg 240

cggcgatttc accatctt 258

<210> 2126
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2126

tccaacctca ctggggttca aggagctgtc aatgttcagg gggaagacca gaaaaagctt 60

gatgttgttt caaatgaggt tttctcaaac tgcttgaggt caagtgggag gacagggata 120

atagcatcag aggaggaaga tgtgccagtg gcagtagaag agagttattc tggaaactac 180

attgtggtgt ttgacccact tgatgggtca tccaatattg atgctgcagt gtcaactggg 240

tccatttttg ggatata 257

<210> 2127
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2127

tcagggggaa gaccagaaaa agcttgatgt tgtttcaaat gaggttttct caaactgctt 60

gaggtcaagt gggaggacag ggataatagc atcagaggag gaagatgtgc cagtggcagt 120

agaagagagt tattctggaa actacattgt ggtgtttgac ccacttgatg ggtcatccaa 180

tattgatgct gcagtgtcaa ctgggtccat tttgggata tacagcccca atgatgagtg 240

tctgctgaca ttg 253

<210> 2128
<211> 228
<212> nucleic acid
<213> Glycine max

<400> 2128

tatcagaaaa agcttgatgt tgtttcaaat gaggttttct caaactgctt gaggtcaagt 60

gggaggacag ggataatagc atcagaggag gaagatgtgc cagtggcagt agaagagagt 120

tattctggaa actacattgt ggtgtttgac ccacttgatg ggtcatccca tattgatgct 180

gcaatgtcaa tggggtccat ttttgggata tacagcccca tgatgagt 228

<210> 2129
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2129

atcaacaaac caaaaaggta aactttttgc aacaaccatg gttgcaatgg cagcagcaac 60

agcatccacc cagttgattt tctcaaagcc ttgttcccct tcacgtctat gccccttcca 120

actatgtgtc tttgacacta aacaagtgct atcaagtggc aggagaaggc atgtgggggg 180

ttctggagtt aggtgcatgg ctgtggggga agcagcaacc actgggacaa agaagagaag 240

tggatatgag cttcaaacac tcactagctg gttgctgaag cagg 284

<210> 2130
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2130

caaaaaggta aactttttgc aacaaccatg gttgcaatgg cagcagcaac agcatccacc 60

cagttgattt tctcaaagcc ttgttcccct tcacgtctat gccccttcca accatgtgtc 120

tttgacacta aacaagtgct atcaagtggc aggagaaggc atgtgggggg ttctggagtt 180

aggtgcatgg ctgtggggga agcagcaacc actgggacaa agaagagaag tggatatgag 240

cttcaaacac tcactagctg gttgctgaag caggag 276

<210> 2131
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2131

caaaaaggta aactttttgc aacaaccatg gttgcaatgg cagcagcaac agcatccacc 60

cagttgattt tctcaaagcc ttgttcccct tcacgtctat gccccttcca actatgtgtc 120

tttgacacta aacaagtgct atcaagtgga ggagaaggca tgtggggggt tctggagtta 180

ggtgcatggc tgtgggggaa gcagcaacca ctgggacaaa gaagagaagt ggatatgagc 240

ttcaaacact cactagctgg ttgctgaagc aggagcagct ggg 283

<210> 2132
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2132

aatcaacaaa ccaaaaaggt aaactttttg caacaaccat ggttgcaatg gcagcagcaa 60

cagcatccac ccagttgatt ttctcaaagc cttgttcccc ttcacgtcta tgccccttcc 120

aactatgtgt ctttgcacac taaacaagtg ctatcaagtg gcaggagaag gcatgtgggg 180

ggttctggag ttaggtgcat ggctgtgggg gaagcagcaa ccactgggac aaagaagaga 240

agtggatatg agcttcaaac actcactagc tggttgctga agcaggagc 289

<210> 2133
<211> 274
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (115)

<223>

<400> 2133

acttttgca acaaccatgg ttgcaatggg cagcagcaac agcatccacc cagttgattt 60
tctcaaagcc ttgttccccc ttcacgtcta tgccccttcc aactatgtgt ctttnacact 120

aaacaagtgc tatcaagtgg caggagaagg catgtggggg gttctggagt taggtgcatg 180

gctgtggggg aagcagcaac catgggacaa agaagagaag tggatatgag cttcaaacac 240

tcactagctg gttgctgaag caggagcaag ctgg 274

<210> 2134
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2134

aaaaggtaaa ctttttgcaa caaccatggt tgcaatggca gcagcaacag catccaccca 60

gttgattttc tcaaagcctt gttccccttc acgtctatgc cccttcgaac tatgtgtctt 120

tgacactaaa caagtgctat caagtggcag gagaaggcat gtggggggtt ctggagttag 180

gtgcatggct gtgggggaag cagcaaccac tgggacaaag aagagaagtg gatatgagct 240

tcaaacactc ac 252

<210> 2135
<211> 275
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (142),(212),(214),(256),(274)
<223> unsure at all n locations

<400> 2135

ttttgcaaca accatggttg caatgggcag cagcaacagc atccacccag ttgattttct 60

caaagccttg ttccccttca cgtctatgcc ccttccaact atgtgtcttt gacactaaac 120

aagtgctatc aagtggcagg anaaggcatg tgggggggttc tggagttagg tgcatggctg 180

tgggggaagc agcaaccact gggacaaaga ananaagtgg atatgagctt caaacactca 240

ctagtggttg ctgaanagga gcaagctggg gtgnt 275

<210> 2136
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2136

caaaaaggta aactttttgc aacaaccatg gttgcaatgg cagcagcaac agcatccacc 60

cagttgattt tctcaaagac cttgttcccc ttcacgtcta tgccccttcc aactatgtgt 120

ctttgacact aaacaagtgc tatcaagtgg caggagaagg catgtggggg gttctggagt 180

taggtgcatg gctgtggggg aagcagcaac cactgggaca aagaagagaa gtggatatga 240

gcttcaaaca ctc 253

<210> 2137
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2137

aaaaggtaaa ctttttgcaa caaccatggt tgcaatggca gcagcaacag catccaccca 60

gttgattttc tcaaagcctt gttccccttc acgtctatgc cccttccatc tatgtgtctt 120

tgacactaaa caagtgctat caagtggcag gagaaggcat gtggggggtt ctggagttag 180

gtgcatggct gtgggggaag cagcaaccac tgggacaaaa agagaagtgg atatgagctt 240

caaacactca ctag 254

<210> 2138
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2138

ttctcaaagc cttgttcccc ttcacgtcta tgccccttcc aactatgtgt ctttgacact 60

aaacaagtgc tatcaagtgg caggagaagg catgtggggg gttctggagt taggtgcatg 120

gctgtggggg aagcagcaac cactgggaca aagaagagaa gtggatatga acttcaaaca 180

ctcactagct ggttgctaga acaggagcaa gctggggtga ttgatgcaga actcatattg 240

tgctgtctag catttccatg gc 262

<210> 2139
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2139

caaaaaggta aacttttgca acaaccatgg ttgcaatggc agcagcaaca gcatcctccc 60

agttgatttt ctcaaagcct cgctcaccct cgcgtctctg tcccttccaa ctaacggtct 120

ttgacaccaa acaagtgctg tcaagttcaa gtggcaggag aaggcatgtg gggggttctg 180

gagttaggtg catggcggtg ggagaagctg caaccactga gactaagaag agaagtggat 240

atgagcttca aacactcact aactggttgc tgaagcagga gcaag 285

<210> 2140
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2140

atggttgcaa tggcagcagc aacagcatcc acccagttga ttttctcaaa gccttgttcc 60

ccttcacgtc tatgcccctt ccaactatgt gtctttgaca ctaaacaagt gctatcaagt 120

ggcaggagaa ggcatgtggg gggttctgga gttaggtgca tggctgtggg ggaagcagca 180

accactggga caaagaagag aagtggatat gagcgtgatc actcactagc tggttgctga 240

agcaggagca a 251

<210> 2141
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2141

caaaaaggta aacttctgca acaaccatgg ttgcaatggc agcagcaaca gcatcctccc 60

agttgatttt ctcaaagcct cgttcaccct cgcgtctctg ccccttccac actatgtgtc 120

tttgacacca aacaagtgct gtcaagttca agtggcagga gaaggcatgt ggggggttct 180

ggagttaggt gcatggcggt gggagaagct gcaaccactg agactaagaa gagaagtgga 240

tatgagcttc aacactcact aactggttgc tgaag 275

<210> 2142
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2142

caacaaacca aaaaggtaaa ctttttgcaa caaccatggt tgcaatggca gcagcaacag 60

catccaccca gttgattttc tcaaagcctt gttccccttc acgtctatgc cccttccaac 120

tatgtgtctt tgacactaaa caagtgctat caagtggcag gagaaggcat gtgggggtt 180

ctggaataga gtgcatggct gtgggggaag cagcaaccac tgggacaaag aagagaagtg 240

gatatgag 248

<210> 2143
<211> 348
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (170)
<223>

<400> 2143

aaatcttttt gctcttagtg ccttagtaca caatccatgt aaccaccact agtgctaaaa 60

tcatcaacca aaaaggtaaa cttctgcaac aaccatggtt gcaatggcag cagcaacagc 120

atcctcccag ttgattttct caaagcctcg ttcaccctcg cgtctctgcn ccttccaact 180

atgtgtcttt gacaccaaac aagtgctgtc aagttcaagt ggcaggagaa ggcatgtggg 240

gggttctgga gttaggtgca tggcggtggg agaagctgca accactgaga ctaagaagag 300

aagtggatat gagcttcaaa cactcactaa ctggttctga agcaggac 348

<210> 2144
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2144

caaaaaggta aacttctgca acaaccatgg ttgccaatgg cagcagcaac agcatcctcc 60

cagttgattt tctcaaagcc tcgttcaccc tcgcgtctct gccccttcca actatgtgtc 120

tttgacacca aacaagtgct gtcaagttca agtggcagga gaaggcatgt gggggttct 180

ggagttaggt gcatggcggt gggagaagct gcaaccactg agactaagaa gagaagtgga 240

tatgagcttc aaacactcac taactggttg ctgaagcagg agc 283

<210> 2145
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2145

aaacttctgc aacaaccatg gttgcaatgg cagcagcaac agcatcctcc cagttgattt 60

tctcaaagcc tcgttcaccc tcgcgtctct gacccttcca actatgtgtc tttgacacca 120

aacaagtgct gtcaagttca agtggcagga gaaggcatgt gggggttct ggagttaggt 180

gcatggcggt gggagaagct gcaaccactg agactaagag agaagtggat atgagcttca 240

aacact 246

<210> 2146
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2146

caaaaaggta aacttctgca acaaccatgg ttgcaatggc agcagcaaca gcatcctccc 60

agttgatttt ctcaaagcct cgttcaccct cgcgtctctg ccccttccaa ctatgtgtct 120

ttgacaccaa acaagtgctg tcaagttcaa gtggcaggag aaggcatgtg gggggttctg 180

gagttaggtg catggcggtg ggagaagctg caaccactga gactaagaag agaagtggat 240

atgagcttca aacactc 257

<210> 2147
<211> 278
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (102),(115),(175),(185),(224),(226)
<223> unsure at all n locations

<400> 2147

caaaaaggta aacttctgca acaaccatgg ttgcaatggc agcagcaaca gcatcctccc 60

agttgatttt ctcaaagcct cgttcaccct cgcgtctctg cnccttccaa ctatntgtct 120

ttgacaccaa acaagtgctg tcagttcaag tggcaggaga aggcctgtgg ggggntctgg 180

agttnggtgc atggcggtgg gagaagctgc aaccatgaga ctangnagag aagtggatat 240

gagcttcaaa catcataact ggttgctgaa gcaggagc 278

<210> 2148
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2148

aaacttctgc aacaactatg gttgcaatgg cagcagcaag agcatcctcc cagttgattt 60

tctcaaagcc tcgttcaccc tcgcgtctct gccccttcca actatgtgtc tttgacacca 120

aacaagtgct gtcaagttca agtggcagga gaaggcatgt gggggttct ggagttaggt 180

gcatggcggt gggagaagct gcaagcactg agactaagaa gaaagtggat atgagcttca 240

aacact 246

<210> 2149
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2149

aaacttctgc aacaaccatg gttgcaatgg cagcagcaac agcatcctcc cagttgattt 60

tctcaaagcc tcgttcaccc tcgcgtctct gccccttcca gctatgtgtc tttgacacca 120

aacaagtgct gtcaagttca agtggcagga gaaggcatgt gggggttct ggagttaggt 180

gcatggcggt gggagaagct gcaacacctg agactaagaa gagaagtgga tatgagcttc 240

aaacactcac 250

<210> 2150
<211> 269
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (17),(33),(53),(65),(89),(118),(126),(261)
<223> unsure at all n locations

<400> 2150

caaaaaggta aacttcngca acaaccatgg ttnccaatgg cagcagcaac agnatcctcc 60

cagtngattt tctcaaagcc tcgttgcanc ctcgcgtctc tgccccttcc aactatgngt 120

ctttgncacc aaacaagtgc tgtcaagttc aagtggcagg agaaggcatg tggggggttc 180

tggagttagg tgcatggcgg tgggagaagc tgcaaccact gagactaaga agagaagtgg 240

atatgagctt caaacactca ntaactggt 269

<210> 2151
<211> 222
<212> nucleic acid
<213> Glycine max

<400> 2151

aaaatcaaca aaccaaaaag gtaaactttt tgcaacaacc atggttgcaa tggcagcagc 60

aacagcatcc acccagttga ttttctcaaa gccttgttcc ccttcacgtc tatgcccctt 120

ccaactatgt gtctttgaca ctaaacaagc gctatcaagt ggcaggagaa ggcatgtggg 180

gggttctgga gttaggtgca tggctgtggg ggaagcagca ac 222

<210> 2152
<211> 192
<212> nucleic acid
<213> Glycine max

<400> 2152

gtaaactttt tgcaacaacc atggttgcaa tggcagcagc aacagcatcc acccagttga 60

ttttctcaaa gccttgttcc ccttcacgtc tatgccccat ccaactatgt gtctttgaca 120

ctaaacaagt gctatcaagt ggcaggagaa ggcatgtggg gggttctgga gttaggtgca 180

tggctgtggg gg 192

<210> 2153
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2153

caaccaaaaa ggtaaacttc tgcaacaacc atggttgcaa tggcagcagc aacagcatcc 60

tcccagttga ttttctcaaa gcctcgttca ccctcgcgtc tctgcccctt ccaactatgt 120

atcttgacac caaacaagtg ctgtcaagtt caagtggcag gagaaggcat gtgggggtt 180

ctggagttag gtgcatggcg gtgggagaag ctgcaaccac tgagactaag aagagaagtg 240

gatatga 247

<210> 2154
<211> 255
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (16),(50),(172),(174),(178),(191),(212),(232)
<223> unsure at all n locations

<400> 2154

acacaatcca tgtaancacc actagcacca taccacactg ccaaaatcan caaaccaaaa 60

aggtaaactt tttgcaacaa ccatggttgc aatggcagca gcaacagcat ccacccagtt 120

gattttctca aagccttgtt ccccttcacg tctatgcccc ttccaactat gngnctgnac 180

taaacaagtg ntatcaagtg gcaggagaag gnatgtgggg ggttctggag tnaggtgcat 240

ggctgtgggg gaagc 255

<210> 2155
<211> 225
<212> nucleic acid
<213> Glycine max

<400> 2155

tacggctgcg agaagacgac agaaggggac cactagtgct aaaatcatca accaaaaagg 60

taaacttctg caacaaccat ggttgcaatg gcagcagcaa cagcatcctc ccagttgatt 120

ttctcaaagc ctcgttcacc ctcgcgtctc tggccccttcc aactatgtgt ctttgacacc 180

aaacaagtgc tgtcaagttc aagtggcagg agaaggcatg tgggg 225

<210> 2156

<211> 218
<212> nucleic acid
<213> Glycine max

<400> 2156

ctttgctctc agtgccttag aacacaatcc atgtaaccac cacaagcacc ataccacact 60

gccaaaatca acaaaccaaa aaggtaaact ttttgcaaca accatggttg caatggcagc 120

agcaacagca tccacccagt tgattttctc aaagccttgt tccccttcac gtctatgccc 180

cttccaacta tgtgtctttg acactaaaca agtgctat 218

<210> 2157
<211> 135
<212> nucleic acid
<213> Glycine max

<400> 2157

caaaaaggta aactttttgc aacaaccatg gttgcaatgg cagcagcaac agcatccacc 60

cagttgattt tctcaaagcc ttgttcccct tcacgtctat gccccttcca actatgtgtc 120

tttgacacta aacaa 135

<210> 2158
<211> 92
<212> nucleic acid
<213> Glycine max

<400> 2158

gtaaacttct gcaacaacca tggttgcgat ggcagcagca acagcatcct cccagttgat 60

tttctcaaag cctcgttcac cctcgcgtct ct 92

<210> 2159
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2159

tgagccttct aagcgcggaa agtactgtgt ttgctttgac ccattggatg gctcgtccaa 60

cattgattgt ggggtttcca ttggcacaat ttttggggtt tatgcgttga aagatgtcca 120

tgaaccaacc atagaagatg tcctgcttcc tgggaagaac atggtggcag ctggttactg 180

tatgtatgga agctcttgca cgcttgtgtt aagcactgga gcaggtgtta atggtt 236

<210> 2160
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2160

gcaacagcca ctaagatgtt ctttgagtct tggcacgcca cgtgtcagaa ctgccaacag 60

atagcaccat ctctttctcc ttctccctaa acctcgaact cagcaccccc atccactggt 120

gattgtttga ttgagccttg aagaaatgga ccacagcgct gatgcacatc gcacggactt 180

gatgaccata acgcggttcg tgctgaacga gcaatccaag caccccgagt cacgcggcga 240

tttcaccatc ttgctcagtc acattgttct cggttgcaag 280

<210> 2161
<211> 363
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (236),(284),(304),(307),(311),(341)...(342)
<223> unsure at all n locations

<400> 2161

caaaactttc atatccccga aattctctct ttttccactg ttccctagga aatatttatt 60

ctcatcttca tcctctacac aacacctaag atcggacaag agggaactca taatttataa 120

aaagaacatt gagaaagaga gaagggaaga agaatggacc accaagctga cactaacaga 180

actgatttga tgacatcaca cgctttgttc tgaatgaaca gtcaaagtat cccgantcac 240

gtggcgattt caccatcctt ctcagtcaca tggttctggg ctgnaatccg tttgttctgc 300

tgtnaanagg ngggttggcg aaacccaagg attgcggaga nncattttca gggggacaa 360

aaa 363

<210> 2162
<211> 393
<212> nucleic acid
<213> Glycine max

<400> 2162

ccccactcca tcatttatta tactttcttc ttcttcttta ttattgttga ttaatataac 60

atacacccac atatttcata tgggtacttg ttaatttggg tgtggattgt tggtttgtta 120

cttgttttgt tccgttcagg tgattgtttg attgagcctt gaagaaatgg accacagcgc 180

tgatgcacat cgcacggact tgatgaccat aacgcggttc gtgctgaacg agcaatccaa 240

gcaccccgag tcacgcggcg atttcaccat cttgctcagt cacattgttc tcggttgcaa 300

gttcgtttgt tccgctgtta acaaaggctg gccttgctaa acttattgga ctcgctggag 360

aaaccaatgt tcaaggtgaa gaacagaata aac 393

<210> 2163
<211> 123
<212> nucleic acid
<213> Glycine max

<400> 2163

cttcaatgtt ggtaagtatc gtcgccttaa gcatggttct agtcagtctg ctgatttctt 60

tcgagctgac aatcctgaag gtgtggaggc acgtaatgag gtagcaaaga tggcatttga 120

aga 123

<210> 2164
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2164

gatttctttc gagctgacaa tcctgaaggt gtggaggcac gtaacgaggt agcaaagatg 60

gcatttgaag atatgatatc ttggatgcaa gaaggtggcc aggttgggat atttgatgcc 120

acaaacagta gcaagcagcg aagaaacatg ctgatgaaat tggctgaagg tagatgcaag 180

atcatttttc tggaaacaat atgcaatgat gtagacataa ttgagaggaa tattcgcttt 240

aaa 243

<210> 2165
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2165

cttgagcatt atgttgtccc aactcccgca actgctgcaa attcagcaca tgtatatgcc 60

gctaacatga cagagaatcc aaggtcacta atttgtgggt ctggcagcag ttcatatccc 120

atcaaggaga tgcaggttat tgtgcctgat ccatctaaga tttttcaaag ttctggaatg 180

gttgaatcca agtcagttgg aacattttca cctctgcaaa agcaagagag tcagagggga 240

ctttttgttg atagaggtgt 260

<210> 2166
<211> 390
<212> nucleic acid
<213> Glycine max

<400> 2166

cccacgcgtc cgtacggctg cgagaagacg acagaagggg ggatgacgta tgaagaaatc 60

aagaagaaca tgccagagga gtatgaatcc cgcaataagg acaaacttag gtatcgttat 120

cctcgtggag agtcttactt agatgttatt caaaggttag aacctgtaat tattgaactt 180

gagcgacaac gagcacctgt tgttgtgata tctcaccagg cagttttgag ggcattatat 240

gcttatttta ctgacaggcc tttgaaagaa attgcagata ttgagatgcc cctccatacg 300

ataatagaaa tacaattggg agttacaggt gtcgaagaga aaagatacaa actaatggac 360

tgaaatgaat aactgaagga gagaagaaac 390

<210> 2167
<211> 122
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (62)...(64),(84),(90)
<223> unsure at all n locations

<400> 2167

ggtgagtaac catgatgagc taatgtccaa ctattttgca cagtctgatg cccttgcata 60

tnnnaagaca gcagagcagc tgcnaaaggn caatgtttcc ccgcacctta ttccacacaa 120

ga 122

<210> 2168

<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2168

tgataatcct ccactcaaga taacatacat ggacaacacg gatcctgctg gaattgatca 60

tcagattgca caacttgggc ctgagctagc ttcaacactt gtgattgtga tatcaaagag 120

tggaggtact cctgagacca gaaatggttt attggaagtg cagaaggcct ttcgtgaagc 180

aggcttggat tttcctaaac agggtgttgc tataacacaa gaaaattctt tgtt 234

<210> 2169
<211> 205
<212> nucleic acid
<213> Glycine max

<400> 2169

ttcctatgtt tgattgggca ggaggtagaa cgtcagagat gtctgcagtt ggcctgcttc 60

cagcagccct tcagggtatt gatattagag aaatgcttgc cggtgcatca ttgatggatg 120

aggctaatag gagtactgtg ttaaggaata accctgcagc tctgctggct ttatgttggt 180

attgggctac agatggtgta ggatc 205

<210> 2170
<211> 223
<212> nucleic acid
<213> Glycine max

<400> 2170

tgcagggcgt tgctataact caagaaaatt ctttgctgga taacactgca agaattgagg 60

gttggttagc tagatttcca atgtttgact gggtgggagg tagaacatca gagatgtctg 120

cagtgggcct gcttccagca gcccttcaga gcattgacat aagagaaatg cttgctggtg 180

cagcattaat ggatgaggcg aataggagta ctgtgataag gaa 223

<210> 2171
<211> 218
<212> nucleic acid
<213> Glycine max

<400> 2171

tgcagggcgt tgctataact caagaaaatt ctttgctgga taagactgca agaattgacg 60

gttggttagc tagatttcca atgtttgact gggtgggagg tagaacatca gagatgtctg 120

cagtgggcct gcttccagca gcccttcaga gcattgacat aagagaaatg cttgctggtg 180

cagcattaat ggatgaggcg aataggagta ctgtgata 218

<210> 2172
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2172

gtgctacgtg atagacctcc tggtcatgat tgggaacttg aacctggtgt cacatgcggt 60

gactacttgt ttggtatgct acagggaaca agatcagctc tgtatgccaa taaccgagag 120

tccatcacag ttactgtaca agaagtgaca cctagaacag ttggtgctct tattgcactc 180

tatgaacgag cagtaggaat ttatgcctcc cttgtcaaca taaatgctta tcatcaacca 240

ggtgtggaag ctggtaaaaa agcagcaggt gaa 273

<210> 2173
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2173

aacaattgag ggaaggtgta cacaatttct ttgtaacatt cattgaggtg ctacgtgata 60

gacctcctgg tcatgattgc gaacttgaac ctggtgtcac atgcggtgac tacttgtttg 120

gtatgctaca gggaacaaga tcagctctgt atgccaataa ccgagagtcc atcacagtta 180

ctgtacaaga agtgacacct agaactgttg gtgctcttat tgcactctat gaacgagcag 240

taggaattta tgcctcc 257

<210> 2174
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2174

tacggctgcg agaagacgac agaaggggat tgggaacttg aacctggtgt cacatgtggt 60

gactacttgt ttggtatgct acagggaaca aggtcggctt tgtatgccaa taaccgagag 120

tccatcacag ttactgtaca agaagggaca ccaagaacag ttggtgctct tattgggctc 180

tatgaacgag cagtaggaat ttatgcctcc cttgtcaaca taaatgctta tccttttcct 240

cgtgtgga 248

<210> 2175
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2175

atcctgcagc tttgctggct ttatgttggt attgggctac agatggtgta ggatcaaaag 60

atatggttat ccttccatat aaggacagct ttctattatt tagtagatac ttgcaacagt 120

tggtcatgga atctctaggc aaggagtttg acttgaatgg taatcgggtt aatcaaggaa 180

ttagtgtcta tggaaataaa ggaagcacag atcagcatgc ctacattcac caactg 236

<210> 2176
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2176

cagcatgcct acattcagca actgagggaa ggtgtgcaca atttttttgt gacattcatt 60

gaggtgctac gcgatagacc acctggtcat gattgggagc ttgaaccagg tgtcacatgt 120

ggtgactacc tgtttggtat gctacaggga acaaggtcag ccctgtatgc caataaccgt 180

gaatccatca ctgtcacagt gcaagaagtg acacccagat cagttggtgc ccttgtagcc 240

ctttatgaac gggccgttgg aatatatgct 270

<210> 2177
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2177

ggagtttgac ttgaatggta atcgggttaa tcaaggaatt agtgtctatg gaaataaagg 60

aagcacagat cagcatgcct acattcaaca actgagggaa ggtgtgcaca atttttttgt 120

gacattcatt gaggtgctac gcgatagacc acctggtcat gattgggagc ttgaaccagg 180

tgtcacatgt ggtgactacc tgtttggtat gctacaggga acaaggtcag ccctgtatgc 240

caataaccgt gaatccatc 259

<210> 2178
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2178

atagaagtac tgtgttaagg aataaccctg cagctctgct ggctttatgt tggtattggg 60

ctacagatgg tgtaggatcc aaggatatgg ttattcttcc gtacaaggac agcctgttat 120

tattcagtag atacttgcag cagctggtca tggaatctct aggcaaggag tttgacttgg 180

atggtaatcg ggttaatcaa ggaattagtg tctatggaaa caaagga 227

<210> 2179
<211> 263
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (32),(93),(104),(106),(142),(172),(191)
<223> unsure at all n locations

<400> 2179

ttcagggcat tgatattaga gaaatgcttg cnggtgcatc attgatggat gaggctaata 60

gaagtactgt gttaaggaat aaccctgcag ctntgctggc ttangnaagg tattgggcta 120

cagatggtgt aggaccaagg anatggttat tcttccgtac aaggacagcc tngtattatt 180

cagtagatac ntgcagcagc tggtcatgga atctctaggc aaggagtttg acttggatgg 240

taatcgggtt aatcaaggaa tag 263

<210> 2180
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2180

gcgcgatcgc gaatcccgat gagagtcgca tggtgggaca ctattggctg agggacccta 60

agcgtgcgcc caactcgttc cttaaaacgc agattgagaa cactctcgac gctgtttgca 120

agttcgctaa cgacgtcgtt agtggtaaga ttaagcctcc ttcgtctccg gagggtcgat 180

ttactcaaat attgtctgtg ggaattggag gttctgctct tggaccacag tttgttgcag 240

aagcattggc acctgataat cct 263

<210> 2181
<211> 398
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (281),(318)
<223> unsure at all n locations

<400> 2181

gaataaatgg ttaaggcaaa aaggattacg gtgataagga ataatcctgc acctttgctg 60

gctttatgtt ggtattgggc tacagatggt gtaggatcaa aagatatggt tatccttcca 120

tataaggaca gcttgttatt atttagtaga tacttgcaac agttggtcat ggaatctcta 180

agcaaggagt ttgacttgaa tggtaatcgg gttaatcaag gaattagtgt ctatggaaat 240

aaaggaagca cagatcagca tgcctacatt cagcaactga nggaaggtgt gcacaatttt 300

tttgtgacat tcattgangt gctacgcgat agaccacctg gtcatgattg ggagcttgaa 360

caagtgtcac atgtggtgac tacctgtttg gtatgcta 398

<210> 2182
<211> 362
<212> nucleic acid
<213> Glycine max

<400> 2182

gttggagaag ggcgcgatcg cgaatcccga tgagagtcgc atggtgggac actattggct 60

gagggaccct aagcgtgcgc ccaactcgtt ccttaaaacg cagattgaga acactctcga 120

cgctgtttgc aagttcgcta acgacgtcgt tagtggtaag attaagcctc cttcgtctcc 180

ggagggtcga tttactcaaa tattgtctgt gggaattgga agttctgctc ttggaccaca 240

gtttgttgca gaagcattgg cacctgataa tcctccactc aagataagat ttgtggacaa 300

cacggatcct gctggaattg atcatcagat tgcacaactt gggcctgagc tagcttcaac 360

ac 362

<210> 2183
<211> 243
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (197),(211),(216)...(217),(222),(224),(226)...(227),
(229)...(230),(232),(234)
<223> unsure at all n locations

<400> 2183

ctgagttccg ccattacact gacatcaatg agcttcctcc acatcggctt gctgaaatca 60

gaagattctt tgaggactac aagaagaatg agaacaaaat agttgatgtt gaagactttc 120

taccggctga agctgccatt gatgccatca attactccat ggacttgtat gctgcttaca 180

tagttgagag ctaaggnact aacttctcta nagacnntgt ancncnntnn gngngctctc 240

caa 243

<210> 2184
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2184

ctcctcttaa tgagaggatt atttcatcca tgaccagaag atctgttgct gcacacccgt 60

ggcacgacct tgagataggg cctggtgctc caacgatctt caattgtgtg attgagattg 120

ggaaagggag caaggtgaaa tatgaactgg acaaaaaatc gggtcttatc aagatcgacc 180

gtgtccatta ctcatcagtt gtgtatcctc acaattatgg gtttatccca cgtactattt 240

gtgaggacag tgatcccctg ga 262

<210> 2185
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2185

ggagccagtt cttccaggtt gctttctacg ggccaaagct attggactca tgcctatgat 60

tgatcagggt gagaaagatg acaagataat tgctgtctgt gctgatgatc ctgagtatag 120

gcattacaat gatatcaagg accttcctcc tcaccgttta gctgaaattc gtcgtttctt 180

tgaagattac aagaagaatg agaacaagga agttgcagtg aacgactttc ttcctgcttc 240

agctgcctat gaag 254

<210> 2186
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2186

gcattattgt ctgtttgatt actactctct ttgcaactga tttctttgag atcaaggctg 60

tcaaggaaat tgaaccagct ttgaaaaagc agcttatcat ctctacagta ctcatgactg 120

ttggaattgc aattattagt tggattgctc tgccaacatc cttcacaatt ttcaactttg 180

gcgctcagaa ggaagtaaag agctggcagc tgttcctctg tgtgggtgtt ggtctatggg 240

ctggac 246

<210> 2187
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2187

caacactggc ggtgcttggg ataatgctaa gaagtacata gaggctggtg cgtctgagca 60

tgcaaggacc ctgggccagc aaggatctga accacataag gcagctgtta ttggagatac 120

cattggagac cctcttaaag atacttcagg tccttcactc aacatcctca tcaagctcat 180

ggccgttgag tcgctcgtct tcgcaccatt tttcgccact cacggtggcc tgcttttcaa 240

gatcttttga tttgagggt 259

<210> 2188
<211> 188
<212> nucleic acid
<213> Glycine max

<400> 2188

gcctctgttc cgccaagcgc agataagacc caccgttcag gccaccggct gagttaggtt 60

tccggcgagg atcggtgctg ctctgctgtc ggagcttgcg acggagatag tcgtgccagt 120

gtgcgccgtc atcgggatcg ggtcctggct ggtgcagtgg ttcctcgtgt cgcgcgtcaa 180

gctcactc 188

<210> 2189
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2189

ctgctggcaa cactactgct gccataggca agggatttgc tattgggtct gccgctctgg 60

tgtctttggc cctatttggt gcatttgtga gcagggctgg aatttcaact gttgatgtct 120

tgacacccaa ggtctttatt ggactcatag ttggtgccat gcttccttac tggttttccg 180

ctatgaccat gaagagtgtt ggaagtgcag ctttgaagat ggttgaggag gttcgtaggc 240

ag 242

<210> 2190
<211> 313
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(29),(31),(34),(49),(53),(64),(75),(78),(87),(91),
(107),(110),(115),(125),(131),(140)...(141),
(143)...(144),(156)...(157),(163),(180),(186),(203),
(224),(239),(261)...(262),(264),(268),(281),(285),
(287)...(288),(296)
<223> unsure at all n locations

<400> 2190

gctctgtgng aaggcttcag tactaaganc nagncctgca catatgatna gangcgagct 60

atanaagcca gcccntgncg acttgcnttg nttagccctg tcatctntcn tggcntggtg 120

ctatnacttc ngtcctatcn ngnntcctta ggctannaat tgncagcctg tgccaatgcn 180

aggacnaacc ttagcagcca ganagggagt tggataggct ttgnatactg catttaggnc 240

tggtgcagtg atgggtttcc nncntggngg aaatggtctt ntggngnnct acattnacca 300

tcaatctctt cag 313

<210> 2191
<211> 119
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(31),(41),(44),(59),(68)...(69),(75),(77),(81),(87),
(90),(112),(118)
<223> unsure at all n locations

<400> 2191

cccatggcnt gaccttgaga tcggacctgg ngctccaatt ntcntcaatt gtgtgattna 60

aattgggnna gggancnagg ngaaatntgn actggacaca aagtcggggc tnatcaang 119

<210> 2192
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2192

agatgacaag ataattgctg tctgtgctga tgatcctgag tataggcatt acaatgatat 60

caaggagctt cctccacacc gtttagctga aattcgtcgt ttctttgaag attacaagaa 120

gaatgagaac aaggaagttg cagtgaacga ctttcttcct gcctcagctg cctatgaagc 180

gatcaagcat tccatgacct tatatgcgga atacgttgtg gagaacttga ggcggtagtg 240

ttgattcctg ggtgcttg 258

<210> 2193
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2193

gcgcaaccca gctgttattg cagacaacgt aggagctaat gttggagata tcgctgggat 60

gggttcagac ttatttgggt cttatgcaga atcatcatgt gcagctttat ttgtagcatc 120

catatcatcg tttggaacaa atcatgatca cacagccatg tcatatcctc tcatcataag 180

ctccatggga attgtggttt gcttgattac gactcttttt gcaactgatc tgtttgaact 240

taaaaacgtg agccaaatag aac 263

<210> 2194
<211> 168
<212> nucleic acid
<213> Glycine max

<400> 2194

cggctcgagg ggagaggaag caaggtgaga tatttacttg acaaaagaac tggaaatatt 60

atggttgatc gtatactaca ctcatcagta gtttatcctc acaactatgg gaatattcca 120

cgtactattt gtgaggacag tgatcccatg gatgtcttgg gtattatg 168

<210> 2195
<211> 194
<212> nucleic acid
<213> Glycine max

<400> 2195

cgcgttcact gcaatgttat atcccctact catcagttct atgggcatta ttgtctgttt 60

gattactact ctttttgcaa ctgatttctt tgcgatcaag gctgtcaagg aaattgaacc 120

agctctaaaa aagcagctta tcatctctac agtactcatg actgttggaa ttgccattat 180

tagttggatt gctc 194

<210> 2196
<211> 190
<212> nucleic acid
<213> Glycine max

<400> 2196

gtgatcccct ggatgtcttg attattatgc aggagccggt tcttccaggt tgctttcttc 60

gggccaaagc aattggtctc atgcccatga ttgatcaggg ggagaaagat gataaaatta 120

ttgctgtctg tgctgatgat cctgagtata gacattacaa tgatatcaaa gagcttcctc 180

cacatcgttt 190

<210> 2197
<211> 265
<212> nucleic acid
<213> Glycine max

<220>

<221> unsure
<222> (233)
<223>

<400> 2197

agtgttttgc ttttgctgtt gtacaagatg agtgatgaga atggcgaaga acctcgagaa 60

aaccgtccgg ttccacgctt gaatgaaagg attctttcat ctctgtctag gagatcagtt 120

gctgctcacc cttgcatgat cttgaaattg gacctggagc gcctatgatt ttcaattgtg 180

ttgtggagat cactaaggga agcaaggtca aatacgaact tgacaaaaag acnggattaa 240

ttaaggttga tcggattctg tactc 265

<210> 2198
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2198

tttcaaagta tttgctttta ttttttggtg aaaaagtgtt ttgcttttgc tgttgtacaa 60

gatgagtgat gagaatggcg aagaacctcg agaaaaccgt ccggttccac gcttgaatga 120

aaggattctt tcatctctgt ctaggagatc agttgctgct cacccttggc atgatcttga 180

aattggacct ggagcgcctt gattttcaat tgtgttgtgg agatcactaa gggaagcaag 240

gtcaaatacg aacttgacaa 260

<210> 2199
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2199

acacgttctc tgtgactgcc tctgttccgc caagcgcagc attgccccac cgttcaggcc 60

accggctgag ttaggtttcc ggcgaggatg ggtgctgctc tgctgtcgga gcttgcgacg 120

gagatagtcg tgccagtgtg cgccgtcatc gggatcgtgt tctcgctggt gcagtggttc 180

ctcgtgtcgc gcgtcaagct cactcccgac cgcaacggaa cgacgtcgtc gccgcg 236

<210> 2200
<211> 272
<212> nucleic acid

<213>   Glycine max

<400>   2200

atgaaattga accagctcta aaaaagcagc ttatcatctc tacagtactc atgactgttg   60

gaattgcaat tattagttgg attgctctgc caacatcctt cacaattttc aactttggtg   120

ctcagaagga agtaaagagc tggcactgtt cctctgtgtg ggtgttggtc tatgggctgg   180

acttattatt gcgtttgtta ctgagtacta tacaagcaat gcttacagtc ctgtacaaga   240

tgttgctgat tcctgccgga ctggagctgc aa   272

<210>   2201
<211>   251
<212>   nucleic acid
<213>   Glycine max

<400>   2201

attgaaccag ctctaaaaaa gcagcttatc atctctacag tactcatgac tgttggaatt   60

gcaattatta gttggattgc tctgccaaca tccttcacaa ttttcaactt tggtgctcag   120

aaggaagtaa agagctggca gctgttcctc tgtgtgggtg ttggtctatg ggctggactt   180

attattgggt ttgttactga gtactataca agcaatgctt acagtcctgt acaagatgtt   240

gctgattcct g   251

<210>   2202
<211>   244
<212>   nucleic acid
<213>   Glycine max

<400>   2202

cggaaggctt cagtactaag agccagccct gcacatatga taagagcaag ctatgcaagc   60

cagcccttgc gactgcattg tttagcactg tatctttctt gcttggtgct ataacttcag   120

tcctatctgg tttccttggg atgaaaattg caacctatgc caatgcaagg acaaccttgg   180

aagccagaaa gggagttgga aaggctttca ttactgcatt taggtctggt gcagtgatgg   240

gttt   244

<210>   2203
<211>   268
<212>   nucleic acid

<213> Glycine max

<220>
<221> unsure
<222> (29)
<223>

<400> 2203

gagccagccc tgcacatatg ataagagcna gctatgcaag ccagcccttg cgactgcatt 60

gtttagcact gtatctttct tgcttggtgc tataacttca gtcctatctg gtttccttgg 120

gatgaaaatt gcaacctatg ccaatgcaag gacaaccttg gaagccagaa agggagttgg 180

aaaggcttca ttactgattt aggtctggtg cagtgacggg tttccttctt gcagcaaatg 240

gtcttttggt gccctacatt accatcaa 268

<210> 2204
<211> 232
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (174)...(175),(180)
<223> unsure at all n locations

<400> 2204

tcacccctgg cacgacttag agattgggcc aggagctcca gcagttttca actgtgtggt 60

tgaaattggc aaaggaagta aggttaagta tgagctggac aagacaagtg gacttataaa 120

ggttgatcgt attctttact catcagtagt ctacccacac aactaacgat attnnccaan 180

aaccatttgt gaagacagtg atcctatgga cgtgctggtt ctaatgcagg aa 232

<210> 2205
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2205

ctcaccttga agattcaagt gcatggaatt cgagtatacc tcaccctaag ctcaatgaaa 60

gaattctgtc ttctctgtca cggagaactg ttgctgctca cccctggcac gatttagaga 120

ttgggccagg agctccagct gttttcaact gtgtggttga aattggcaaa ggcagtaagg 180

ttaagtatga gctggacaag acaagtggac ttataaaggt tgatcgtatt ctttactcat 240

cagttgtcta cccacacaac tatggt 266

<210> 2206
<211> 290
<212> nucleic acid
<213> Glycine max

<400> 2206

agtttctctt atctctaagt caacatggct caccatgaag attcaagtgt atggaattcg 60

agtatacctc accctaagct caatgaaaga attttgtctt ctctgtcacg gagaactgtt 120

gctgctcacc cctggcacga tttagagatt gggccaggag ctccagctgt tttcaactgt 180

gtggttgaaa ttggcaaagg cagtaaggtt aagtatgagc tggacaagac aagtggactt 240

ataaaggttg atcgattctg tactcatcag ttgtctaccc acacaactat 290

<210> 2207
<211> 296
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (10),(24),(54),(94),(263)
<223> unsure at all n locations

<400> 2207

ctccgactcn ttctcttaat cccnaaagtc aacatgggct caccttggaa gatncaagtg 60

gcatgggaat tcgagtatac ctcaccctaa gctncaatga aagaattctg tcttctctgt 120

cacggagaac tgttgctgct cacccctggc acgatttaga gattggggcc aggagctcca 180

gctgttttca actgtgtggt tgaaattggc aaaggcagta aggttaagta tgagctggac 240

aagacaagtg gacttataaa ggntgatcgt attctttact catcagttgt ctaccc 296

<210> 2208
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2208

ctttctctta tctctaagtc aacatggctc accttgaaga ttcaagtgca tggaattcga 60

gtatacctca ccctaagctc aatgaaagaa ttctgtcttc tctgtcacgg agaactgttg 120

ctgctcaccc ctggcacgat ttagagattg ggccaggagc tccagctgtt ttcaactgtg 180

tggttgaaat tggcaaaggc agtaaggtta agtatgagct ggacaagaca agtggactta 240

taaaggttga tcgtattct 259

<210> 2209
<211> 287
<212> nucleic acid
<213> Glycine max

<400> 2209

tttcgcactt tctttcagtc accatctccg actctttctc ttatctctaa gtcaacatgg 60

ctcaccttga agattcaagt gcatggaatt cgagtatacc tcaccctaag ctcaatgaaa 120

gaattctgtc ttctctgtca cggagaactg ttgctgctca cccctggcac gatttagaga 180

ttgggccagg agctccagct gttttcaact gtgtggttga aattggcaaa ggcagtaagg 240

ttaagtatga gctggacaag acaagtggac ttataaaggt tgatcgt 287

<210> 2210
<211> 281
<212> nucleic acid
<213> Glycine max

<400> 2210

ctttcactca ccagtcacca cctctgaact ctctctctca tctataagtc aacatggctc 60

atcatgaaga ttcaagtgca tggaattcga gtaaacctca ccctaagctc aatgaaagaa 120

ttctgtcttc tctgtcacgg agaactgttg ctgctcaccc ctggcacgac ttagagattg 180

ggccaggagc tccagcagtt ttcaactgtg tggttgaaat tggcaaagga agtaaggtta 240

agtatgagct ggacaagaca agtggactta taaaggttga t 281

<210> 2211
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2211

ctctcatcta taagtcaaca tggctcatca tgaagattca agtgcatgga attcgagtaa 60

acctcaccct aagctcaatg aaagaattct gtcttctctg tcacggagaa ctgttgctgc 120

tcacccctgg cacgacttag agattgggcc aggagctcca gcagttttca actgtgtggt 180

tgaaattggc aaaggaagta aggttaagta tgagctggac aagacaagtg gacttataaa 240

gg 242

<210> 2212
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2212

tccgactctt tctcttatct ctaagtcaac atggctcacc atgaagattc aagtgtatgg 60

tattcgagta tacctcaccc taagctcaat gaaagaattt tgtcttctct gtcacggaga 120

actgttgctg ctcaccсctg gcacgattta gagattgggc caggagctcc agctgttttc 180

aactgtgtgg ttgaaattgg caaaggcagt aaggttaagt atgagctgga caagacaagt 240

ggacttataa aggtt 255

<210> 2213
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2213

tctgaactct ctctctcatc tataagtcaa catggctcat catgaagatt caagtgcatg 60

gaattcgagt aaacctcacc ctaagctcaa tgaaagaatt ctgtcttctc tgtcacggag 120

aactgttgct gctcacccct ggcacgactt agagattggg ccaggagctc cagcagtttt 180

caactgtgtg gttgaaattg gcaaaggaag taaggttaag tatgagctgg acaagacaag 240

tggact 246

<210> 2214
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2214

tctgaactct ctctctcatc tataagtcaa catggctcat catgaagatt caagtgcatg 60

gaattcgagt aaacctcacc ctaagctcaa tgaaagaatt ctgtcttctc tgtcacggag 120

aactgttgct gctcacccct ggcacgactt agagattggg ccaggagctc cagcagtttt 180

caactgtgtg gttgaaattg gcaaaggaag taaggttaag tatgagctgg acaagacaag 240

tggact 246

<210> 2215
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2215

ctcaccagtc accacctctg aactctctct ctcatctata agtcaacatg gctcatcatg 60

aagattcaag tgcatggaat tcgagtaaac ctcaccctaa gctcaatgaa agaattctgt 120

cttctctgtc acggagaact gttgctgctc acccctggca cgacttagag attgggccag 180

gagctccagc agttttcaac tgtgtgggtt gaaattggca aaggaagtaa ggttaagtat 240

gagctggaca agacaagtgg acttat 266

<210> 2216
<211> 248
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (238)
<223>

<400> 2216

cagtcaccac ctctgaactc tctctctcat ctataagtca acatggctca tcatgaagat 60

tcaagtgcat ggaattcgag taaacctcac cctaagctca atgaaagaat tctgtcttct 120

ctgtcacgga gaactgttgc tgctcacccc tggcacgact tagagattgg gccaggagct 180

ccagcagttt tcaactgtgt ggttgaaatt ggcaaaggaa gtaaggttaa gtatgagnct 240

gacaagac 248

<210> 2217
<211> 242
<212> nucleic acid

<213> Glycine max

<400> 2217

ccagtcacca cctctgaact ctctctctca tctataagtc aacatggctc atcatgaaga 60

ttcaagtgca tggaattcga gtaaacctca ccctaagctc aatgaaagaa ttctgtcttc 120

tctgtcacgg agaactgttg ctgctcaccc ctggcacgac ttagagattg ggccaggagc 180

tccagcagtt ttcaactgtg tggttgaaat tggcaaagga agtaaggtta agtatgagct 240

gg 242

<210> 2218
<211> 246
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2),(53),(61),(217),(238)
<223> unsure at all n locations

<400> 2218

tncgactctt tctcttatct ctaagtcaac atggctcacc ttgaagattc aantgcatgg 60

nattcgagta tacctcaccc taagctcaat gaaagaattc tgtcttctct gtcacggaga 120

actgttgctg ctcacccctg gcacgatttg agattgggcc aggagctcca gctgttttca 180

actgtgtggt tgaaattggc aaaggcagta aggttangta tgagctggac agacaagngg 240

attata 246

<210> 2219
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2219

gtcaccacct ctgaactctc tctctcatct ataagtcaac atggctcatc atgaagattc 60

aagtgcatgg aattcgagta aacctcaccc taagctcaat gaaagaattc tgtcttctct 120

gtcacggaga actgttgctg ctcacccctg gcacgactta gagattgggc caggagctcc 180

agcagttttc aactgtgtgg ttgaaattgg caaaggaata acgtaagtat gagctggcag 240

acaagtgga 249

<210> 2220
<211> 196
<212> nucleic acid
<213> Glycine max

<400> 2220

ctgaactctc tctctcatct ataagtcaac atggctcatc atgaagcatt caagtgcatc 60

gaattcgagt agacctcacc ctaagctcaa tgaaagaatt ctgtcatctc tgtcacggag 120

aactgttgct gctcacccct ggcacgactt agagattggg ccaggagttc cagcagtttt 180

caactgtgtg gttgaa 196

<210> 2221
<211> 227
<212> nucleic acid
<213> Glycine max

<400> 2221

ccaagacgag cttcaccttg cgccgaaggc cacagatggt tgaaaccgat atggatgccg 60

aaactgttgc aaatgtggtt ccaccaaagg agactcctca cagtgttccc atctcttatc 120

attcctcaca ctcacaccct tctcttaatg agaggattat ttcatccatg accagaagat 180

ctgttgctgc acacccgtgg cacgaccttg agatagggcc tggtgct 227

<210> 2222
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2222

gaacaatagt agcaagcaga gccccaagac gagcttcacc ttgcgccgaa gggccacaga 60

tggttgaaac cgatatggat gccgaaactg ttgcaaatgt ggttccacca aaggagactc 120

caaacatgtt cccatctctt atcattcctc acactcacac cctcctctta atgagagatt 180

atttcatcca tgaccagaag atctgttgct gcacacccgt ggcacgacct tgagataggg 240

cctggtgctc caa 253

<210> 2223
<211> 276

<212> nucleic acid
<213> Glycine max

<400> 2223

gtcgaaatag ggaaaggaag caaggtgaaa tatgaacttg acaaaagaac tggacttatt 60

atggttgatc gtatacttta ctcatcagtt gtttatcctc acaactatgg gttcattcca 120

cgtactattt gtgacgacgg tgatcccatg gatgtcttgg ttattatgca ggagccagtt 180

cttccgggtt gctttcttcg ggccaaagct attggtctca tgcctatgat tgatcagggt 240

gagacagatg acaagataat tgctgtctgt gctgat 276

<210> 2224
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2224

taggacctga agctccaaag atcttcaact gtgtggttga aattgggaaa ggaagtaagg 60

tgaaatatga acttcacaaa agaactggtc ttattatggt tgatcgtatc ctttactcat 120

cggctgtgta tcctcacaac tatgggttta tcccacgtac tatttgtgag gatggtgatc 180

ccatggatgt cttggttatc atgcaggagc cagttcttcc aggttgcttt ctacgggcca 240

aagctattgg actcatgcct atgattgat 269

<210> 2225
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2225

cttaacgaga ggattctttc atccatttcc aggagacacg ttgctgcaca cccgtggcac 60

gatcttgaga taggacccga agctccaaag atcttcaact gtgtggtcga aatagggaaa 120

ggaagcaagg tgaaatatga acttgacaaa agaactggac ttattatggt tgatcgtata 180

ctttactcat cagttgttta tcctcacaac tatgggttta ttccacgtac tatttgtgag 240

gacggtgatc ccatggatgt cttggtatta tgcagg 276

<210> 2226
<211> 240

<212> nucleic acid
<213> Glycine max

<400> 2226

ggaaacatgt tgctgctcac ccgtggcatg atcttgagat aggacctgaa gctccaaaga 60

tcttcaactg tgtggttgaa attgggaaag gaagtaaggt gaaatatgaa cttgacaaaa 120

gaactggtct tattatggtt gatcgtatcc tttactcatc ggttgtgtat cctcacaact 180

atgggtttat cccacgtact atttgtgagg acggtgatcc catggatgtc ttggttatca 240

<210> 2227
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2227

acttattatg gttgatcgta tactttactc atcagttgtt tatcctcaca actatgggtt 60

tattccacgt actatttgtg aggacggtga tcccatggat gtcttggtta ttatgcagga 120

gccagtcttc cgggttgctt tcttcgggcc aaagctattg gtctcatgcc tatgattgat 180

cagggtgaga aagatgacaa gataattgct gtctgtgctg atgatcctga gtataggca 239

<210> 2228
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2228

taggacctga agctccaaag atcttcaact gtgtggttga aattgggaaa ggaagtaagg 60

tgaaatatga acttgacaaa agaactggtc ttattatggt tgatcgtatc ctttcctcat 120

cggttgtgta tcctcacaac tatgggttta tcccacgtac tatttgtgag gatggtgatc 180

ccatggatgt cttggttatc atgcaggagc cagttcttcc aggttgcttt ctacgggcca 240

aagctattgg actcatgcct atgattga 268

<210> 2229
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2229

ctgtttcttc tttttctcca accttcgttt caccaccaca cttacattac tttgtcgaaa 60

tggctccacc aattgagacc ccaaacaagg tttccagcta tcaacagtcc ccaaaccctc 120

gtcttaacga gaggattctt agatacattt ccaggagaca cgttgctgca cacccgtggc 180

acgatcttga gataggaccc gtagctccaa agatcttcaa ctgtgtggtc gaaataggga 240

aaggaagcaa ggtgaaatat gaacttgac 269

<210> 2230
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2230

ttctcactct agatctgtgt ttctctctcc aaccttcgtt tcaccacact tccatcactt 60

gtcgagtgta gaaatggctc caccaattga gaccccaacc aaggtttcca gctatcagca 120

ctccccaaac cctcgtctta acgagaggat tctttcatcc atttccagga aacatgttgc 180

tgctcacccg tggcatgatc ttgagatagg acctgaagct ccaaagatct tcaactgtgt 240

ggttgaaatt gggaaaggca gtaaggtga 269

<210> 2231
<211> 283
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (20),(167)
<223> unsure at all n locations

<400> 2231

atttcatttc actcactcan tcttcgtttc gtttctcttt ctcactctag atctgtgttt 60

ctctctacca accttcgttt caccacactt ccatcacttg tcgagtgtag aaatggctcc 120

accaattgag accccaacca aggtttccag ctatcagcac tccccanacc ctccgtctta 180

acgagaggat tctttcatcc atttccagga aacatgttgc tgctcacccg tggcatgatc 240

ttgagatagg acctgaagct ccaaagatct tcaactgtgt ggt 283

<210> 2232

<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2232

attccacaca caccacaaca tcacactctc tagatctctg tttcttcttt ttctccaacc 60

ttcgtttcac caacacactt acattacttt gtcgaaatgg ctccaccaat tgagacccca 120

aacaaggttt ccagctatca acagtcccca aaccctcgtc ttaacgagag gattctttca 180

tccatttcca ggagacacgt tgctgcacac ccgtggcacg atcttgagat aggacccgaa 240

gctccaaaga tcttcaactg tgtggtcga 269

<210> 2233
<211> 444
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (412)
<223>

<400> 2233

tacggctgcg agaagacgac agaaggggac acacgttctc tgtgactgcc tctgttccgc 60

caagcgcagc attttcccac cgttcaggcc accggctgag ttaggtttcc ggcgaggatg 120

ggtgctgctc tgctgtcgga gcttgcgacg gagatagtcg tgccagtgtg cgccgtcatc 180

gggatcgtgt tctcgctggt gcagtggttc ctcgtgtcgc gcgtcaagct cactcccgac 240

cgcaacggaa cgacgtcgtc gccgcgcaac aacaaaaacg gctacggcga cttcctcatt 300

gaagaggaag aaggcatcaa cgaccacagc gtcgttgtga aatgcgctga gatacagaac 360

gctatctccg aaggtgcaac atcctttctt ttcactgaat atcaatatgt gnggattttc 420

atggttgctt ttgcaatact gatc 444

<210> 2234
<211> 436
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (402)

<223>

<400>	2234

ctgcctctgt tccgccaagc gcagcatttt cccaccgttc aggccaccgg ctgagttagg   60

tttccggcga ggatgggtgc tgctctgctg tcggagcttg cgacggagat agtcgtgcca 120

gtgtgcgccg tcatcgggat cgtgttctcg ctggtgcagt ggttcctcgt gtcgcgcgtc 180

aagctcactc ccgaccgcaa cggaacgacg tcgtcgccgc gcaacaacaa aaacggctac 240

ggcgacttcc tcattgaaga agaagaaagc atcaacgacc acagcgtcgt tgtgaaatgc 300

gctgagatac agaacgctat ctccgaaggt gcaacatcct ttcttttcac tgaatatcaa 360

tatgtgggga tcttcatggt tgcttttgca atactgatct tnctttttct gtgctctgtg 420

gaaggcttca gtacta   436

<210>	2235
<211>	408
<212>	nucleic acid
<213>	Glycine max

<400>	2235

acggctgcga gaagacgaca gaagggggag cttccctcac acattctctg tgactgcctc   60

tgttccgccg aacccagcat tttcccaccg ttcgggccac cggcggagtt agttttccgg 120

caaggatggg tgctgctctg ctgtctgagc ttgcgacgga gatagttgtg ccggcctgcg 180

ccgtcatcgg gatcgtgttc tcgttggtgc agtggttcct cgtgtcgcgc gtcaagctca 240

ctcccgaccg aaacggaacg acgtcgtcgc cgcgcaacaa caagaacggc tacggcgact 300

tcctcattga ggaggaagaa ggcatcaacg accacagcgt cgttgtgaaa tgcgctgaga 360

tacagaacgc tatctccgaa agtgcaacat cctttctttt cactgaat   408

<210>	2236
<211>	396
<212>	nucleic acid
<213>	Glycine max

<400>	2236

gactcttttct cttatctcta agtcaacatg gctcaccttg aagattcaag tgcatggaat   60

tcgagtatac ctcaccctaa gctcaatgaa agaattctgt cttctctgtc acggagaact 120

gttgctgctc acccctggca cgatttagag attgggccag gagctccagc tgttttcaac 180

tgtgtggttg aaattggcaa aggcagtaag gttaagtatg agctggacaa gacaagtgga 240

cttataaagg ttgatcgtat tctttactca tcagttgtct acccacacaa ctatggtttt 300

atcccaagaa ccatttgtga agacagtgat cctatggacg tgctggttct aatgcaggaa 360

cccgtgcttc ctggttcctt ccctcgtgct cgtgct 396

<210> 2237
<211> 376
<212> nucleic acid
<213> Glycine max

<400> 2237

agtaaggctg cgagaagacg acagaagggg acagaagaat agtagcaatc agagactgaa 60

gacgagcttc cccttgcgcc gaagggccac cgatggttga aaccgagatg gatgcagaaa 120

ctgttgcaaa tgtggttcca ccaaaggaga ctccaaatag tgtttccatt tctcatcatt 180

cctcacaccc tccccttaat gagaggatta tttcatccat gaccaggaga tctgttgctg 240

cacacccatg gcatgacctt gagaatagga ctggtgctca aattatcttc aattgtgtga 300

ttgaaattgg gaaagggacc aaggtgaaat atgaactgga caaaaagtcg ggcttatca 360

agatcgaccg cgtgct 376

<210> 2238
<211> 352
<212> nucleic acid
<213> Glycine max

<400> 2238

agtacggctg cgagaagacg acagaagggg acagaacaat agtagcaagc agagccccaa 60

gatctgtgct tgaaccttca cgtgtgtttc cttccttctg cagacgagct tcaccttgcg 120

ccgaagggcc acagatggtt gaaaccgata tggatgccga aactgttgca aatgtggttc 180

caccaaagga gactccaaac agtgttccca tctcttatca ttcctcacac tcacaccctc 240

ctcttaatga gaggattatt tcatccatga ccagaagatc tgttgctgca cacccgtggc 300

acgaccttga gataaggcct gatgctccaa cgatcttcaa ttgtgtgatt ga 352

<210> 2239

<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2239

agtacggctg cgagaagacg acagaagggg cacacccgtg gcacgatctt gagataagac 60

ccgaagctcc aaagatcttc aactgtgtgg tcgaaataag gaaaggaagc aaggtgaaat 120

atgaacttga caaaagaact ggacttatta tggttgatcg tatactttac tcatcagttg 180

tttatcctca caactatggg tttattccac gtactatttg tgaggacggt gattccatgg 240

atgtcctggg t 251

<210> 2240
<211> 401
<212> nucleic acid
<213> Glycine max

<400> 2240

gagactcaac aagcattcca ctcacacctc atcgtttctc tctctagatc tctgtttctt 60

ctttttctcc aaccttcgtt tcaccaccac acttacatta ctttgtcgaa atggctccac 120

caattgagac cccaaacaag gtttccagct atcaacagtc cccaaaccct cgtcttaacg 180

agaggattct ttcatccatt tccaggagac acgttgctgc acacccgtgg cacgatcttg 240

agataggacc cgaagctcca aagatcttca actgtgtggt cgaaataggg aaaggaagca 300

aggtgaaata tgaacttgtc aaaagaactg gacttattat ggttgatcgt atactttact 360

catcagttgt ttatcctcac aactatgggt ttattccacg t 401

<210> 2241
<211> 411
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (274)...(275),(312),(316)
<223> unsure at all n locations

<400> 2241

agtacggctg cgagagacga cagaagggga gactcaacaa gcattccact cacacctcat 60

cgtttctctc tctagatctc tgtttcttct ttttctccaa ccttcgtttt accaccacac 120

ttacattact ttgtcgaaat ggctccacca attgagaccc caaacaaggt ttccagctat 180

caacagtccc caaaccctcg tcttaacgag aggattcttt catccatttc cgggagacac 240

gttgctgcac acccgtggca cgatcttgag atanngaccg aagctccaaa gatcttcaac 300

tgtgtggtcg anatanggaa aggaagcaag gtgaaatatg aacttgacaa aagaactgga 360

cttattatgg ttgatcgtat actttactca tcagttgttt atcctcacaa c 411

<210> 2242
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2242

caacaacaac aacaacgttg tagtgtgttg ttttgttttt tagtgcagtt tatttttttg 60

gcatcaaagt ggttgaatcc atggattgtg gttatggtat tcccagggaa ctctcagatc 120

ttcagaagat tcggtctttg taccagccag agctccctcc ttgtctccag ggaaccactg 180

tgagggttga atttggtgac gcaaccacca ctgctgaccc cactgatgca gtcaccgtct 240

gcagggcttt tcgtggcgct tgtggacacc ttt 273

<210> 2243
<211> 340
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (122),(279),(313)
<223> unsure at all n locations

<400> 2243

aaccatggct atgtctacta ttttgctttt gactttcttt tctttcattt atggcagtgc 60

agctactcat cacgtttata gaaatcttca gagtttatct tctgattcct ccaaccaacc 120

tnacagaact gcttatcact tccaacctcc caagaattgg ataaatgatc ccaatggacc 180

atgagatatg caggacttta ccacctattc tatcaataca atcctaaagg tgcagtttgg 240

ggaaatattg tgtgggcaca ttcagtgtca aaggatctng tgaattggac tccactagat 300

cctgccattt ttncatctca accgtccgat ataatggctg 340

<210> 2244
<211> 273
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(147),(183),(198),(229),(251),(258)
<223> unsure at all n locations

<400> 2244

aaaatggang gtagtcattg gtgctcaaaa tggggatgaa gggaagacaa ttctctacca 60

aagtgaggat tttgttaatt ggagtccgga attgaaccct ttttttgcaa cagataacac 120

tggagtttgt gagtgtccag atttttnctc ctgtgtccat caatagcaca aatggggtgg 180

atncatctgt ccaaagtnca aagtgttaga acatgtcttg aagataacna ctacgtagac 240

atcaggatat natcttcngg taaataggtc tat 273

<210> 2245
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2245

aacaccctca gaaccctgtc atgagtccac caagtggagt tgccgtgaat aacttcagag 60

acccttcaac tgcttggcag ggaaaggatg gaaaatggag ggtagtaatt ggtgctcaaa 120

atggtgatga agggaagaca attctctacc aaagtgagga ctttgttaat tggaaagtgg 180

atcctaatcc cttctacgca tcagataata ccggagtttg tgagtgtcca gacttcttcc 240

ctgttaacat cagtggcagc aaaaatgggg tggata 276

<210> 2246
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2246

gctaacatga tcaattcaag ctcatttagg gatcctacca ctgcttggct aggcaaagat 60

gggtactgga gggtgctgat tggaagcaaa atacacacta ggggtatggc aattttgtac 120

aagagcaaaa actttgttaa ttgggttcaa gccaaacaac ccctacattc agctgaaggc 180

actggaatgt gggagtgccc tgatttctat ccagtgctga ataataaacc atcatcaact 240

attggtcttg acacatctgt gaatggt 267

<210> 2247
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2247

ccctaatgtc aagacgagtt cacttagaag tttgattgac cgctccatta ttgagagttt 60

tggggagaaa gggagaattt gtattaccag tagagtttat ccctcgttgg ctattgacaa 120

agatgcacat cttgatgttt tcaagaatgg aagccagagt gtggtgatct ctgaactgaa 180

tgcttggagc atgaaggaag cagaatttag ttaagaagaa agcacaatta agctgtaact 240

aaaaagattt gga 253

<210> 2248
<211> 276
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (21),(43),(275)
<223> unsure at all n locations

<400> 2248

cttcaaacca agacattagc natctagctc ttgttgacat tcnaatacac tttggtagct 60

atgatcatgg agatcaatgc atcccccgac aacattaatt cagtcaagta caacgtacat 120

gaaaaacagc cttaccgaac ttggtaccac tttcagcccc cacaaaattg gatgaatgat 180

ccaaatggac caatgtacta caaaggagtt taccactttt tctaccaaca taacccttat 240

gcaccaacct ttggtaggca tatggtatgg ggtcnt 276

<210> 2249
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2249

cctagctctt gttgacattc caataacttt ggtgctatga tcatggagat caatgcatcc 60

cccgacaaca ttaattcagt caagtacaac gtacatgaaa aacagcctta ccgaacttgg 120

taccactttc agcccccaca aaattggatg aatgatccaa atggaccaat gtactacaaa 180

ggagtttacc actttttcta ccaacataac gcttatgcac caactttggt aggctatggt 240

atggggtcat ccgcatctat g 261

<210> 2250
<211> 339
<212> nucleic acid
<213> Glycine max

<400> 2250

cgtccgatgg attaaaggat agtcaaactg tcctaagata tgactatgga aaatattatg 60

cctcaaaaac catttttgag gatggaaaga acagaatggt cttattgggt tgggttaatg 120

aatcctcaag tgtttcggat gatatcaaga aaggatgggc tggaatccat actattccaa 180

gggccatctg gcttcataaa tctggaaaac agttggtgca atggccggtg gtggaacttg 240

aaagcttacg tgtgaatcct gtccactggc ccaacaaagt ggtcaaaggt ggtgaaatgc 300

ttcaagttac tggtgttact tgcgcacaag ctgacgttg 339

<210> 2251
<211> 437
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (14)
<223>

<400> 2251

cgaaaaacca tttntgagga tggaaagaac agtaaggtct tattgggttg ggttaatgaa 60

tcctcaagtg tttcggatga tatcaagaaa ggatgggctg gaatccatac tattccaagg 120

gccatctggc ttcataaatc tggaaaacag ttggtgcaat ggccggtggt ggaacttgaa 180

agcttacgtg tgaatcctgt ccactggccc accaaagtgg tcaaaggtgg tgaaatgctt 240

caagttactg gtgttactgc ggcacaggct gacgttgaaa tttcatttga cgtgaatgag 300

tttggaaagg gcgaagtatt ggaccaatgg gtggatcccc aaattctggg tagtagaaag 360

ggtgcagccg taaagggtgg tttgggaccc tatggcttgc tagtttttgc ttctcgtggc 420

ttgcaagagt acacggc 437

<210> 2252
<211> 352
<212> nucleic acid
<213> Glycine max

<400> 2252

catggccgta tctccaattt tgtcgttgtt ggctatctgc tatctcattt atggcacggg 60

tggtcttccc attgaatcta cccaccatgt ttacagaaat cttcagactc tatcttctga 120

ttcctctgat caaccttata gaaccgctta ccatttccaa cctcccaaaa attggataaa 180

tgaccctaat ggaccaatga ggtacaaatg actttatcat ctcttctacc aatacaattc 240

aaaaggtgct gtatggggta atattgtgtg gccccactca gtatcaaatg atctcgtgta 300

ttggactcct ctagatcatg ccatctaccc tcctcaacct tatgatatca ac 352

<210> 2253
<211> 396
<212> nucleic acid
<213> Glycine max

<400> 2253

attccattaa aagctatacc atggccatat ctccaatttt gttgttggct atcttatctg 60

tcatttatgg caatggtgtt cttcccattg aagctaccca tcatgtttac agaaatcttc 120

agactctatc ttctgattcc tctgatcaac cttatagaac tgcttaccat ttccaacctc 180

gcaaaaattg gataaatgac cctaatggac caatgaggta caaaggactt taccatctgt 240

tctatcaata caatccaaaa ggtgccgtat ggggcaatat tgtctgggcc cactcaatat 300

caaatgatct tgtgaattgg actccactgg atcatgccat ctacccttct caaccgtctg 360

atataaacgg ttgttggtca ggctcagcca caatac 396

<210> 2254
<211> 451
<212> nucleic acid
<213> Glycine max

<220>

<221> unsure
<222> (401)
<223>

<400> 2254

ggccgtatct ccaattttgt tgttgttggc tatcttctct ctcatttatg gcaatggtat 60

tcttcccatt gaagctaccc accatgttta cagaaatctt cagactctat cttctgattc 120

ctctgatcaa ccttatagaa ccgcttacca tttccaacct cccaaaaatt ggataaatga 180

ccctaatgga ccaatgaggt acaaaggact ttatcatctc ttctaccaat acaatccaaa 240

aggtgctgtt tggggtaata ttgtgtgggc ccactcagta tcaaaggatc ttgtgaattg 300

gacccctcta gatcatgcca tctacccttc tcaaccgtct gatatcaacg gttgttggtc 360

aggctcagcc acaatacttc ctgggggcaa accagccatt ntatacacag gaattgaccc 420

taataatcac caagttcaaa acttagccct a 451

<210> 2255
<211> 283
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (17),(35),(52),(61),(69),(94),(103),(120),(138),(166),
(179),(202),(212),(230),(240),(273)
<223> unsure at all n locations

<400> 2255

gttttcatag gcttctnttt tctcttgttg cagtnacgaa cttctgaaga antggcagat 60

ncatccttng acacactctc actctttccg cganaggttt cangacaact ctcactggtn 120

cacaggaacg aaattttngc ccttgctgtg caaggcttga agccangggc aagggaatnc 180

tgcaacatgc accaagtggt tncagagttt gnagacatcc ctgaggagan cagaaagaan 240

ctgccaagat ggtgtcttgg agaagttttg agntccacac agg 283

<210> 2256
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2256

aagtcagtgg tactgaccat actcatattt tgcgagttcc attcagatca gagtcaggaa 60

ctctccgtaa atggatttca aggtttgatg tgtggcctta tctagagact tatgcagagg 120

atgttgccag tgaaattgct gctgagttac aagggtatcc tgatttcatc attggaaact 180

acagtgatgg gaatcttgtt gcatctttat tggcttataa aatgggagtt acacagtgca 240

caatcgcgca tgcacttgag aagacaa 267

<210> 2257
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (46),(51),(55),(104)...(105),(152),(176),(187),(222),
(226)
<223> unsure at all n locations

<400> 2257

agtacacatg gcaaatttac tcacagaggc ttctcactct caaggntaga nacangcttc 60

cagaagccat agacaccagt gagagtgaga agcctctgga agcnngtgtc taaccttgac 120

cgccgtgaga gccgccgcta tctcgagatg tnctatgctc tcaagtaccg caaatnggcc 180

gagtcgngcc ccttgctgtt gagtaaactg aggatgaaga gncggntaaa gaaatggagg 240

aaccggcttt ttgtttctca ttgg 264

<210> 2258
<211> 119
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (8),(38),(68),(80),(82)...(83),(88)...(89),(91),
(95)...(96),(103),(115)
<223> unsure at all n locations

<400> 2258

tactgctnaa cgggtattgg aaatgatgca tctgctantg gatattcttc aggctcctga 60

tccttccnca caacatacgn gnngccgnnt ngcgnncggc ggngctgggg ggggngggc 119

<210> 2259

<211> 271
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (4)...(5),(169),(229)
<223> unsure at all n locations

<400> 2259

gtgnnaagct catgttatct acagctgaga attcaactta aatggatttg aatgttcata 60

tgtgtagtgc acaatcgcgc atgcacttga gaagacaaaa tatccagatt cagatttata 120

ttggaagaaa tttgaggata aataccactt ttcatgccaa tttactgcng acctaatagc 180

catgaattct gctgatttta tcatcaccag tacataccag gagattgcng gaacgtaagt 240

accgttttca tgatatatat ggttacttca g 271

<210> 2260
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2260

ggcttgttga atgctttggt aaaagctcca agctgagaga gcttgtgaat cttgtggtag 60

ttggtggcta cattgatgta cagaagtcta cggacataga agaaatgagg gagatagaga 120

aaatgcacaa tctcatagaa gaatacaact tacatggcca attccgttgg ataaaggccc 180

aaatgaatcg cgctcgtaat ggagagctct accgttatat tgctgatgtg aaaggtgctt 240

ttgtg 245

<210> 2261
<211> 98
<212> nucleic acid
<213> Glycine max

<400> 2261

catgagcttg ccaaagagtt gcaaggtcag ccagattcga ttgtcggaaa ctacagtgat 60

ggaaacattg ttgcctcttt gttggcacat aaattagg 98

<210> 2262
<211> 209

<212> nucleic acid
<213> Glycine max

<400> 2262

actctatata acccacctct ctttattgcg ttcattctgt tttactgttg aagtctttca 60

ctagccaata gccaccgatc atttgacctg gttcacagtc tacgtgagag gcttgatgaa 120

accctcactg ccaacaggaa tgaaatttag gcccatcagt caaggatcga tgtcaagggc 180

aaaggcatca tacaaaaaca ccaggtcat 209

<210> 2263
<211> 175
<212> nucleic acid
<213> Glycine max

<400> 2263

cagaattcaa aacgcagatg cactccaaca tgttctgagg aaagctgagg agtatcaggg 60

cacagtgcct cctgaaactc cctactcaga atttgagcac aagttccagg agattggttt 120

ggagagaggg tggggtgaca acgcggaggt gatccttgag tcaattcaaa ttctc 175

<210> 2264
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2264

tggtgtatag agaatgtcgt gttgctgatc attccattgg gccattggaa attcgtgttg 60

tgaggagtgg gagctttaag gagcttatag atgatgcagt ctcaagaggt gcggccataa 120

atcaagaaga tgtgtggcct catcgagacc tacagattga acggccaatt cagatggata 180

tcgtctcaga tgaaccgtgt gaggaacgaa gagctctacc gtgtcgtctg tgacacaagg 240

ggtgcctatg tgcaactgca gtt 263

<210> 2265
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2265

ctccgagcac aagttcgtgc tgaaggacaa gaagaagccg atcatcttct cgatggcgcg 60

tctcgaccgc gtgaagaaca tgacaggcct ggtggagatg tacggcaaga acgcgcgcct 120

gagggagctg gcgaacctcg tgatcgtcgc cggtgaccac ggcaaggagt ccaaggacag 180

ggaggagcag gcggagttca agaagatgta cagcctcatc gacgagtaca agttgaaggg 240

ccatatccgg tggatctcgg cgcagcatga accgcgtcc 279

<210> 2266
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2266

agggtatcct gatttcatca ttggaaacta cagtgatggg aatcttgttg catctttatt 60

ggcttataaa atgggagtta cacagtgcac aatcgcgcat gcacttgaga agacaaaata 120

tccagattca gatttatatt ggaagaaatt tgaggataaa taccactttt catgccaatt 180

tactgctgac ctaatagcca tgaataatgc tgattttatc atcaccagta cataccagga 240

gattgcggga 250

<210> 2267
<211> 52
<212> nucleic acid
<213> Glycine max

<400> 2267

ggtgttcgga actgagcact cccacattct tcgagttccc tttagaactg ag 52

<210> 2268
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2268

caattttgta ttggagcttg attttgagcc atttaatgcc acatttcctc gtccaactcg 60

ctcagcatcc attggcaatg gtgtccaatt tctcaatcgc cacctttcat ctattatgtt 120

tcgcaacaag gattccttgc agcccttgct tgatttcctc cgagctcaca aatacaaggg 180

ccatgctctg atgttaaatg atagaataca aaccatttcc aaacttcagc tgcatt 236

<210> 2269
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2269

cagattcaga tttatattgg aatctggata ttttgtcttc tcaagtgcat gcgcgattgt 60

gcactgtgta actcccattt gatacactca atgaagatgc acttgagaag acaaaatatc 120

cagattcaga tttatattgg aagaaatttg aggataaata ccacttttca tgccaattta 180

ctgctgacct aatagccatg aaaatgcgtg ttttatcatc accagtacat accaggagat 240

tgc 243

<210> 2270
<211> 86
<212> nucleic acid
<213> Glycine max

<400> 2270

ggtgggcagg ttgtttatat actagatcaa gtgcgtgccc ttgaaaatga gatgctcctt 60

cggatcaaga aacagggact tgattt 86

<210> 2271
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2271

attttataat cactagtaca taccaagaaa ttgcaggaag caagaataat gttggacaat 60

atgagagcta cactgccttc actcttccag gactgtatcg tgttgttcat ggcattgatg 120

tttttgatcc caagtttaat atcgtgtctc ctggtgcgga catgtgcata tattttccat 180

actcggacag agaaaggaga ctaacttctc tacatggttc aattgaaaaa ctgg 234

<210> 2272
<211> 121
<212> nucleic acid
<213> Glycine max

<400> 2272

cgttcattct gttttccagt tgaagtcttt ccacagccaa tggccactga tcgtttgacc 60

cgggttcaca gtctccgtga gacgcttgat gaaaccctca ctgccaacag gaacgaaatt 120

t 121

<210> 2273
<211> 167
<212> nucleic acid
<213> Glycine max

<400> 2273

cgcaacgagt tcatctctct tctctccagg tatgttgctg gggcaaagg aatactacaa 60

ccacatgacc tgctgtacga ggtagaaaag cttcttgaag aggatgaagg gatgcagaaa 120

ctcaaagata gcccttttgt caaagagcgt gaatctcaaa ggaagca 167

<210> 2274
<211> 221
<212> nucleic acid
<213> Glycine max

<400> 2274

gaagaactta accgggttag ttgaatggta tggcaagaac aagagactga gaaatttggt 60

gaaccttgtc atagtaggag gcttctttgc cccttcaaaa tcaaaagata gggaggaaat 120

ggcagaaata aaaaatatgc atgacttaat tgataagtac caactcaagg gtcaatttag 180

atggattgct gctcagacta ataggtatcg caatggagag c 221

<210> 2275
<211> 166
<212> nucleic acid
<213> Glycine max

<400> 2275

gtcaagggaa agactgtgat gtggaatgac agaattcaaa acccagatgc agtccaacat 60

gtgctgagga gagctgagga gtatcgaggc acagtgcctc ctgaaacgcg ctactcagag 120

tttgagcacg agggccagga gattggttag aggagagggt ggggtg 166

<210> 2276
<211> 222
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (184),(188)
<223> unsure at all n locations

<400> 2276

cgtgtgaaga acatcacagg actcgtggag tggtacggta agaacgcgaa gtagagggag 60

ttggtgaacc ttgtggttgt tgccggagac aggaggaagg agtcgaagga cttggaagag 120

aaggccgaga tgaagaagat gtacggcctg atcgagacca aagtgttgaa cgggcaactc 180

agantgantt cagtatagag taaccgatct aggaacggag ag 222

<210> 2277
<211> 220
<212> nucleic acid
<213> Glycine max

<400> 2277

ctttgagcag agcaaggctg atccatctca ctgggcaaaa atctcccccg gtggactcaa 60

gggtatcatg aggcatacac atggccaatt tactcggaca ggctcttgac actcactggt 120

gtgtatcgct tctggaagca cgtgaccaat cttgaacgcc gtgcgagcaa acgttacctc 180

gagatgttct atgctctcca gtaacgcaaa ttggctgagt 220

<210> 2278
<211> 169
<212> nucleic acid
<213> Glycine max

<400> 2278

atgggagtta cacagtgcac aatcgcgcat gcacttgaga agacaaaata tccagattca 60

gatttatatt ggaagaaatt tgaggataaa taccactttt catggcaatt tactgctgac 120

ctaatagcca tgataaatgc tgatttaatc atcaccagtc attaccagg 169

<210> 2279
<211> 258
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure

<222> (34)
<223>

<400> 2279

ggttactttg cccaagataa tgtctgagtc gtancctgac acgtggtggg caggttgtgt 60

acatcttagg tcaagttcgt gccttggaga atgagatgct caaccgcatc aagacacaag 120

gccttgatat cacgcctcgt attctcatta ttactcgtct tcgccctgat gcagtaggaa 180

ctacctgtgg ccaacgtcta gagaccgtat atgatactga atattgtgac attctccgag 240

ttccttgcag aaccgaaa 258

<210> 2280
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2280

gcagacagat aaaggaatcc tgcatcaatg gatttctcgc ttcgacattt acccctatct 60

tgagaggttt actcaggatg caacagccaa gattcttgag ttcatggaag ggaaaccaga 120

tctagttatt ggaaattaca ctgatggaaa tttggtagca tcactaatgg ctagaaaact 180

tgggataact cagggaacta tagcacatgc tttagagaag accaagtatg aagactcaga 240

tgtcaagtgg caagagttgg acccc 265

<210> 2281
<211> 266
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (98),(122),(190)
<223> unsure at all n locations

<400> 2281

gggttcaatt tctcaaccga catctgtcat cgttcatgtt tcgtagcaaa gaaagtttgg 60

aacctctcct tgcatttctt cgcacacaca gatatgangg tcatgcaatg atgctaaatg 120

ancgcattta taacttatcc aagctccagt cttccttggc aaaggcagaa gaattacttt 180

ctagactacn acccaatgca ccatattctg actttgaata tgaactacaa ggattgggat 240

ttgagagcgg ttggggtgat acagca 266

<210> 2282
<211> 254
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (214),(222),(241)
<223> unsure at all n locations

<400> 2282

cacaacacgg gttgcctcac tttactctgc cgcagatgtt tatgttataa actctcaggg 60

gctgggagaa acatttggac gtgtgactat agaagcaatg gcgtttggtc ttccggttct 120

tgggacggac gctggaggaa cacaggagat tgttgagcac aatgttacag gtctcttcat 180

cctgttggac atccggggaa tcttgttctt gcanagatcc cnggtttta ctcaaaaacc 240

ngtgggaaag gaac 254

<210> 2283
<211> 152
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (57),(66)
<223> unsure at all n locations

<400> 2283

gctggaagca aggacactgt tggacagtac gaatctcaca cagcatacaa tcacccngga 60

ctctancgcg ttgtgcatgg tagggatgtc tttgagcgag aattcaacat tggctcccct 120

ggagctgatc aaaccattta cttgccccca ca 152

<210> 2284
<211> 224
<212> nucleic acid
<213> Glycine max

<400> 2284

gcctggtgtg tgggagtact gacagcgcat gtgcacgctc ttattgtaga ggagttgcaa 60

cctgctgagt accttcaatt gaaggaagca cttgctgatg gtagtatcta atggcgactt 120

tgtgcttgag taggactttg aagcactcaa tgcagccttc tactgcgtca gctcctaaca 180

agtcaactgg agatggtgtg gagtactcat gcgccacctt tctg 224

<210> 2285
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2285

tcctcttttg cgttcactct ggtctcatag tgacgaactt ctgaagaaat ggcacatcat 60

cctgtgacac actctcactc tatccgcgac acgcttgaac ccaagggcaa tggaatcctg 120

caacatcacc aagtggttgc agagtatgaa gaaatccctg aggagagcag aaagaaactc 180

caagatggtg tctttggaga agttttgaga tccacacagg aagccatagt gctgccacca 240

cttgtagctc ttgctgttcg accaaggcct ggt 273

<210> 2286
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 2286

ggaatatctg cgtgtgaatg tgtacatgct tgttgttgat gagcttcgtc ctgctgagta 60

tctgcgtttc aaggaggagc ttgttgaggg aagttcaaac ggcaacttat gtgcttgagt 120

tggactttga accgtttaat gcatccttcc ctgcgcccaa ctctgaacaa gtccattgga 180

aatggcgtcg agttcctcaa ccgccacctt tcggccaagc tcttccacac aacatacg 238

<210> 2287
<211> 179
<212> nucleic acid
<213> Glycine max

<400> 2287

tacggctgcg gaagacgaca gaaggggggg ggttgaagat acaaggagga gagacttaca 60

tgtgttcctc attctccact gagctgtaaa gaagctcttc aatgtcagag tggaattctg 120

ttaacctagg ctcagtttca gtgtatggga agtatatacc catgtctgca ccgggagag 179

<210> 2288
<211> 293
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (272)
<223>

<400> 2288

gcgtttcaag gaggagcttg ttgagggaag ttcaaacggc aactttgtgc ttgagttgga 60

ctttgaaccg tttaatgcat ccttccctcg cccaactctg aacaagtcca ttggaaatgg 120

cgtcgagttc ctcaaccgcc acctttcggc caagctcttc catgacaagg agaaccctca 180

gtaactgctt gagttcctca ggcttcacag ttataaggga aagaccatga tgttgaacga 240

caaagttcaa agcctggatt ctctccacat angatttgag aaaagcagaa gag 293

<210> 2289
<211> 293
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45)
<223>

<400> 2289

cttcttcttt tacgttcatt ctgttttcat agtgaggatc ttctnaagaa atggcaaatc 60

accctttgac acactctcac tctttccgcg agaggtttga tgaaactctc actggtcaca 120

ggaatgaaat tttggccctt ttgtcaaagc ttgaagccaa gggcaaggga atcctgcaac 180

accaccaggt ggttgcagag tttgaagaaa tccctgagga gagcagaaag aaactccaag 240

gtggtgtctt tggagaagtt ttgagatcta cacaggaagc catagtgctg cca 293

<210> 2290
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2290

gatcttctga agaaatggca aatcaccctt tgacacactc tcactctttc cgcgagaggt 60

ttgatccaac tctcactggt cacaggaatg aaattttggc ccttttgtca aggcttgaag 120

ccaagggcaa gggaatcctg caacaccacc aggtggttgc agagtttgaa gaaatccctg 180

aggagagcag aaagaaactc caaggtggtg tctttggaga agttttgaga tctacacagg 240

aagccatagt gctgccacca tttgtgg 267

<210> 2291
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2291

ccttcctttt ttgcgttcat tctgttttca tagtgacgaa cttctgaaga aatggcaaat 60

catcctttga cacactctca ctctttccgc gagaggtttg atgaaactct cactggtcac 120

aggaacgaaa ttttggccct tctgtcaagg cttgaagcca agggcaaggg aatcctgcaa 180

catcaccaag tggttgcaga gtttgaagaa atccctgagg agagcagaaa gaaactccaa 240

gatggtgtct ttggagaagt tttgaga 267

<210> 2292
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2292

gatcttctga agaaatggca aatcaccctt tgacacactc tcactctttc cgcgagaggt 60

ttgataaaac tctcactggt cacaggaatg aaattttggc ccttttgtca aggcttgaag 120

ccaagggcaa gggaatcctg caacaccacc aggtggttgc agagtttgaa gaaatccctg 180

aggagagcag aaagaaactc caaggtggtg tctttggaga agttttgaga tctacacagt 240

aagccatagt gctgccacca tttgtggc 268

<210> 2293
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2293

cttcacccct tcctttttg cgttcattct gttttcatag tgacgaactt ctgaagaaat 60

ggcaaatcat cctttgacac actctcactc tttccgcgag aggtttgatg aaactctcac 120

tggtcacagg aacgaaattt tggcccttct gtcaaggctt gaagccaagg gcaagggaat 180

cctgcaacat caccaagtgg ttgcagagtt tgaagaaatc cctgaggaga gcagaaagaa 240

actccaagat ggtgtcttt 259

<210> 2294
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2294

tcctttttg cgttcattct gttttcatag tgacgaactt ctgaagaaat ggcaaatcat 60

cctttgacac actctcactc tttccgcgag aggtttgatg aaactctcac tggtcacagg 120

aacgaaattt tggcccttct gtcaaggctt gaagccaagg gcaagggaat cctgcaacat 180

caccaagtgg ttgcagagtt tgaagaaatc cctgaggaga gcagaaagaa actccaagat 240

ggtgtctttg gagaagt 257

<210> 2295
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2295

tagcacccct tcttctttta cgtacattct gttttcatag tgaggttctt ctgaagaaat 60

ggcaaatcac gcctttgaca cactctcact ctttccgcga gaggtttgat gtaactctca 120

ctaggtcaca ggaatgaaat tttggccctt tatgtcaagg cttgaagcca agggcaaggg 180

aattctgcaa caccaccagg tggttgcaga gtttgaagaa atccctgagg agagcagaaa 240

gaaactccaa ggtggtgtct ttggagaagt tttgagatc 279

<210> 2296
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2296

caccccttct tcttttacgt tcattctgtt ttcatagtga ggatcttctg aagaaatggc 60

aaatcaccct ttgacacact ctcactcttt ccgcgagagg tttgatgaaa ctctcactgg 120

tcacaggaat gaaattttgg cccttttgtc aaggcttgaa gccaagggca agggaatcct 180

gcaacaccac caggtggttg cagagtttga agaaatccct gaggagagca gaaagaaact 240

cca 243

<210> 2297
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2297

cttcttcttt tacgttcatt ctgttttcat agtgaggatc ttctgaagaa atggcaaatc 60

accctttgac acactctcac tctttccgcg agaggtttga tgaaactctc actggtcaca 120

ggaatgaaat tttggccctt ttgtcaaggc ttgaagccaa gggcaaggga atcctgcaac 180

accaccaggt ggttgcagag tttgaagaaa tccctgagga gagcagaaag aaactccaag 240

gtgg 244

<210> 2298
<211> 281
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (59),(138),(142),(146),(187),(217),(233),(237),
(240)...(241),(269)
<223> unsure at all n locations

<400> 2298

ccttcacccc ttcctttttt gcgttcattc tgttttcata gtgacgaact tctgaagana 60

tggcaaatca tcctttgaca cactctcact gctttccgcg agaggtttga tgaaactctc 120

actggtcaca ggaacganat tntggncctt ctgtcaaggc ttgaagccaa gggcaaggga 180

tcctgcnaca tcaccaagtg gttgcagagt ttgaagngat ccctgaggag agnaganacn 240

natcccagga tggtgtcttt ggagaagtnt tgagatccac a 281

<210> 2299

<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2299

attttcccct tcaacccttc cttttttgcg ttcattctgt tttcatagtg acgtacttct 60

gatgaaatgg caaatcatcc tttgacacac tctcactctt tccgcgagag gtttgattta 120

actctcactg gtcacaggaa cgaaattttg gtccttctgt caaggcttga agccaagggc 180

tagggaatcc tgcaacatca ccaagtggtt gcagagtttg aagaaatccc tgaggagagc 240

agaaagaaac tccaagatgg tgtctttg 268

<210> 2300
<211> 346
<212> nucleic acid
<213> Glycine max

<400> 2300

ctcattctat tttcatagtg acgaacttct gaagaaatgg caaatcatcc tttgacacac 60

tctcactctt tccgcgcgag gtctgatgaa actctcactg gtcacaggaa cgaaattcta 120

gcccttctgt caagagctga acccaagggc aagggaatcc tgcaacatca ccaagtggtt 180

gcagagtttg acgaaatccc tgaggcgagc agaaagaaac tccaagatga tgtctttcga 240

gcaattttga gatccacaca ggaagccata atgctaccac catttgtagc tcttgctgtt 300

cgaccatggc ctcgtgtatg ggactatctg cgtgtgaatg tgcaca 346

<210> 2301
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2301

gaagaaatgg caaatcatcc tttgacacac tctcactctt tccgcgagag gtttgatgaa 60

actctcactg gtcacaggaa cgaaattttg gcccttctgt caaggcttga agccaagggc 120

aagggaatcc tgcaacatca tcaagtggtt gcagagtttg aagaaatccc tgaggagagc 180

agaaagaaac tccaagatgg tgtctttgga gaagttttga gatccacaca ggaagccata 240

gtgct 245

<210> 2302
<211> 233
<212> nucleic acid
<213> Glycine max

<400> 2302

ttccccttca ccccttcctt ttttgcgttc attctgtttt catagtgacg aacttctgaa 60

gaaatggcaa atcatccttt gacacactct cactctttcc gcgagaggtt tgatgaaact 120

ctcactggtc acaggaacga aattttggcc cttctgtcaa ggcttgaagc caagggcaag 180

ggaatcctgc aacatcacca agtggttgca gagtttgaag aaatccctga gga 233

<210> 2303
<211> 262
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (88)
<223>

<400> 2303

attctgtttt catagtgacg aacttctgaa gaaatggcaa atcatccttt gacacactct 60

cactctttcc gcgagaggtt tgatgtanat ctcactggtc acaggaacga aattttggcc 120

cttctgtcaa ggcttgaagc caagggcaag ggaatcctgc aacatcacca agtggttgca 180

gagtttgaag aaatccctga ggagagcaga aagaaactcc aagatggtgt ctttggagaa 240

gttttgagat ccacacaaca ta 262

<210> 2304
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2304

ttcacccctt cctttttgc gtacattctg ttttcatagg cttcttttt ctcttgttgc 60

agtgacgaac ttctgaagat atggcaaatc atcctttgac acactctcac tctttccgcg 120

agaggtttga tggaactctc actggtcaca ggaacgaaat tttggccctt ctgtcaaggc 180

ttgaagccaa tggtaaggga atcctgcaat atcatcaagt ggttgcagag tttgaagaac 240

atccctaacg agagcagaaa 260

<210> 2305
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2305

cccttccttt tttgcgttca ttctgttttc atagtgacga acttctgaag aaatggcaaa 60

tcatcctttg acacactctc actctttccg cgagaggttt gatgaaactc tcactggtca 120

caggaacgaa attttggccc ttctgtcaag gcttgaagcc aagggcaagg gaatcctgca 180

acatcaccaa gtggttgcag agtttgaaga aatccctgag gagagcagaa agaaactcca 240

agatggtgt 249

<210> 2306
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2306

ttgcaccctg cctgttttgc gtgcattctg tcttcatagt gacgaacttc tggagaaatg 60

gcaaatcatc ctttgacaca ctctcactct ttccgcgaga ggtttgatga gactctcact 120

ggtcacatga acgagattat tgcccttctg tcaaggcttg aagccaaggg caagggaatc 180

ctgcaacatc accaagtggt tgcagagttt gaagaaatcc ctgaggagag cagaaagaga 240

ctccgagatg gtgccttgga gaagt 265

<210> 2307
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2307

ccccttcacc ccttcttctt ttacgttcat tctgttttca tagtgaggat cttctgaaga 60

aatggcaaat caccctttga cacactctca ctctttccgc gagaggtttg atgaaactct 120

cactggtcac aggaatgaaa ttttggccct tttgtcaagg cttgaagcca agggcaaggg 180

aatcctgcaa caccaccagg tggttgcaga gtttgcagaa atccctgagg agagcagaaa 240

aaactccaag gtggt 255

<210> 2308
<211> 157
<212> nucleic acid
<213> Glycine max

<400> 2308

cactctcact ctttccgcga gaggtttgat gtaactctca ctggtcacag gaatgaaatt 60

ttggcccttt tgtcaaggct tgaagccaag ggcatgggaa tccttcaaca ccaccaggtg 120

gttgcagagt ttgaagaaat ccctgaggag agcagaa 157

<210> 2309
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2309

cttcacccct tcctttttttg cgttcattct gttttcatag tgacgaactt ctgaagaaat 60

ggcaaatcat cctttgacac actctcactc tttccgcgag aggtttgatg aaactctcac 120

tggtcacagg aacgaaattt tggcccttct gtcaaggctt gaagccaagg gcaagggaat 180

cctgcaacat caccaagtgg ttgcagagtt tgaagaaatc cctgaggaga gcagaa 236

<210> 2310
<211> 312
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (39)
<223>

<400> 2310

gctccgcatt cggctcgagc atatacgttc attcactgnt catagtgagg atcctctgaa 60

gaaatggcaa ctcacccttt gacacactca cactccttcc gcgagaggta tgatccaact 120

ctcactggtc acaggaatgc aatcatggcc ctaatgtcca ggcttgaagc caagggcaag 180

ggcatcctgc aacaccacca ggtggttgca gagtttgaag aaatccctga ggagagcaga 240

aagacactcc aaagtggtgt ctttggagaa gttttgacct ctacacatga agccatcccg 300

ctgccaccat tt 312

<210> 2311
<211> 147
<212> nucleic acid
<213> Glycine max

<400> 2311

ccccttcacc ccttcttctt ttacgttcat tctgttttca tagtgaggat cttctgaaga 60

aatggcaaat caccctttga cacactctca ctctttccgc gagaggtttg atgaaactct 120

cactggtcac aggaatgaaa ttttggc 147

<210> 2312
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2312

ttccccttca ccccttcctt ttttgcgttc attctgtttt catagtgacg aacttctgaa 60

gatatggcaa atcatccttt gacacactct cactctttcc gcgagaggtt tgatgaaact 120

ctcactggtc caggaacgaa attttggccc ttctgtcaag gcttgaagcc aagggcaagg 180

gaatcctgca acatcaccaa gtggttgcag agtttgagga atcccctgag gaagccaaaa 240

a 241

<210> 2313
<211> 206
<212> nucleic acid
<213> Glycine max

<400> 2313

cccttcttct tttgcgttca ttctgttttc atagtgatga tcttcttgaa taatggcaaa 60

tcaccctttg acacactctc actctttccg cgagaggttt gatgaaactc tcactggtca 120

caggaatgaa attttgggcc gtttgtcaat gcttgaagcc aacggcatcg gaatcctgta 180

ccactaccag gtggatgaat attttg 206

<210> 2314

<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2314

ccctactctg aaaagcagaa cagacttaca gccctgcatg gttcaattga acagctatta 60

tttgctcctg agcagactga tgaatacatt ggtttattga aagacaagtc aaagcccata 120

attttctcca tggcaaggct agacagagta aaaaacataa ctggattggt agaaagcttt 180

ggtaagaaca gcaaattgag ggaactggtc aaccttgtca tagtagctgg ttatattgat 240

gtaaagaagt ccagtgacag agaagaaatt gcagaaattg agagatgcat gagctcatg 299

<210> 2315
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2315

gcagaacagg cttacagccc tgcatggttc aattgaaaag ctgttatttg atcctgagca 60

gactgatgaa tacattggtt cattgaaaga caagtcaaag cccataattt tctccatggc 120

aaggctagac agagtgaaaa acataactgg attggtagaa tgctttggta agaacagcaa 180

attgagggaa ctggtcaacc ttgttgtagt agctggttat attgatgtaa agaagtcgag 240

tgacagagca gaaatggcag aaattgagaa g 271

<210> 2316
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2316

gtttattgaa agacaagtca aagcccataa ttttctccat ggcaaggcta gacagagtaa 60

aaaacataac tggattggta gaaagctttg gtaagaacag caaattgagg gaactggtca 120

accttgtcat agtagctggt tatattgatg taaagaagtc cagtgacaga gaagaaattg 180

cagaaattga gaagatgcat gagctcatga aaaagtataa cttagttggt gattt 235

<210> 2317
<211> 241
<212> nucleic acid

<213> Glycine max

<400> 2317

gcagaacagg cttacagccc tgcatggttc aattgaaaag ctgttatttg atcctgagca 60

gactgatgaa tacattggtt cattgaaaga caagtcaaag cccataattt tctccatggc 120

aaggctagac agagtgaaaa acataactgg attggtagaa tgctttggta agaacagcaa 180

attgagggaa ctggtcaacc ttgttgtagt agctggttat attgatgtaa aaagtcgagt 240

g 241

<210> 2318
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2318

agtatgagag ccacgctggt tttactcttc ctgggctcta tagggttgtc catggcattg 60

atgtttttga tcccaagttc aatattgtct ctcctggagc tgatatgtca atatatttcc 120

cctactctga aaagcagaac agacttacag ccctgcatgg ttcaattgaa cagctattat 180

ttgctcctga gcagactgat gaatacattg gtttattgaa agacaagtca aagcccataa 240

ttttctccat ggcaaggcta g 261

<210> 2319
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2319

atcaccagta cataccagga gattgctgga acgaaaaata ctgttggcca gtatgagagc 60

cacgctggtt ttactcttcc tgggctctat agggttgtcc atggcatgat gtttttgatc 120

ccaagttcaa tattggtctc tcctgggagc tgatatgtca atatatttcc cctactctga 180

aaagcagaac agacttacag ccctgcatgg ttcaattgaa cagctattat ttgctcctga 240

gcagactgat gaatacat 258

<210> 2320
<211> 229
<212> nucleic acid

<213> Glycine max

<400> 2320

acctaatagc catgaataat gctgatttta tcatcaccag tacataccag gagattgcag 60

gaacgaaaaa tactgttggc cagtatgaga gccacgctgg ttttactctt cctgggctct 120

atagggttgt ccatggcatt gatgtttttg atcccaagtt caatattgtc tctcctggag 180

ctgatatgtc aatatatttc ccctactctg aaaagcagaa cagacttac 229

<210> 2321
<211> 222
<212> nucleic acid
<213> Glycine max

<400> 2321

tgctgatttt atcatcacca gtacatacca ggagattgca ggaacgaaaa atactgttgg 60

ccagtatgag agccacgctg gttttactct tcctgggctc tatagggttg tccatggcat 120

tgatgttttt gatcccaagt tcaatattgt ctctcctgga gctgatatgt caatatattt 180

cccctactct gaaaagcaga acagacttac agccctgcat gg 222

<210> 2322
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2322

cgcacttgag ttttataaat aatgtccgtg attttagtat ttttaccttc tctttctctc 60

ctcttatcga aagcttaatc acaaaactaa aatcacggac attatttata aaactcaagt 120

gcgacaaact ccaaatgaga aagaaaaagc cggtgatttt agttttgtga ttaagctttc 180

gataagaagt gagaaagaga aggaaaaaaa aagttgcttt tgtttatgta cgtaccatga 240

tttggacctt aa 252

<210> 2323
<211> 109
<212> nucleic acid
<213> Glycine max

<400> 2323

cgcacttgag ttttataaat aatgtccgtg attttagttt tgtcgccttc tctttctctc 60

ctcttatcga aagcgtaatc acaaaactaa aatcacggac attatttat 109

<210> 2324
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2324

cataatttga ttgatgaact tgacaacatc cctggcgatg atcaagcaat agtggatctt 60

aaaaatggtc cctttggtga aatcgtcaag tctgcaaagg aagccatagt tttgcctcct 120

tttgtggcaa tagcagttcg tccaagacct ggtgtttggg aatatgtccg tgttaatgtc 180

tctgagctca gcgtggagca attaagtgtt tctgaatatc tcagcttcaa ggaagaactt 240

gtagatggaa agattaatga ca 262

<210> 2325
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 2325

ctctcatgct tttttccact tgcaaactcc aaattcactc tgacagtttt tgcagctaat 60

taagaagaac ttaacagaca tataaacata gtgatcgtta tgtctacgca accaaagctt 120

ggtcggattc ccagtatcaa gaccgagttg aagacactct ctctgctcac cgtaacgaac 180

tcatttctct cctctccagg tatgtggctc aggggagatg gattttgcaa ccccataatt 240

tgattgatga acttgacaac atccctggcg at 272

<210> 2326
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2326

ctttaactca tgctttttcc cacttgcaaa ctccaaattc actctctgac agtttttgca 60

gccaattaag aagaacttaa cagacatata aacatagtga tcgtcatgtc tacgcaacca 120

aagcttggtc ggatttccag tatcagagac cgagttgaag acactctctc tgctcaccgt 180

aacgaactca tttctctcat ctccaggtat gtggctcagg ggaaagggat tttgcaaccc 240

cataatttga ttgatgaact tgac 264

<210> 2327
<211> 189
<212> nucleic acid
<213> Glycine max

<400> 2327

gctttttccc acttgcaaac tccaaattca ctctctgaca gtttttgcag ctaattaaga 60

agaacttaac agacatataa acatagtgat cgtcatgtct acgcaaccaa agcttggtcg 120

gatttccagt atcagagacc gagttgaaga cactctctct gctcaccgta acgaactcat 180

ttctctcct 189

<210> 2328
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2328

gcatgcagcc actgcttgag ttcctcaggc ttcacagtta taagggaaag accatgatgt 60

tgaatgacaa agttcaaagc ctggattctc tccaacatgt tttgagaaaa gcagaagagt 120

atctgatttc agttgctcct gaaacaccct actcggaatt cgagaacaga ttccgggaga 180

ttggtctgga gagggggtgg ggtgacactg ccgagcgtgt cctcgagatg atccagcttc 240

tcctggacct tcttgaggca cctgaccctt gcaccctcg 279

<210> 2329
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2329

gagagtatgc agccactgct tgaattcctc aggcttcaca gttataaggg aaagaccatg 60

atgttgaatg acaaagttca aagcctggat tctctccagc atgttttgag aaaagcagaa 120

gagtatctga cttcagttgc tcctgaaaca ccctactcag aattcgagaa caaattccgg 180

gaaattggtt tggagagggg gtggggtgac atcgccgagc gtgtcctcga gatgatccag 240

cttctcttgg accttcttga ggcacccgac ccttgctacc tcgaga 286

<210> 2330
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2330

agcaactctg aacaagtcca ttggaaatgg cgtcgagttc ctcaaccgcc acctttcggc 60

caagctcttc catgacaagg agagcatgca gccactgctt gagttcctca ggcttcacag 120

ttataaggga aagaccatga tgttgaatga caaagttcaa agcctggatt ctctccaaca 180

tgttttgaga aaagcagaag agtatctgat ttcagttgct cctgaaacac cctactcgga 240

attcgaaaac agattccggg agattggtc 269

<210> 2331
<211> 267
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (212),(216),(255)
<223> unsure at all n locations

<400> 2331

gcatgcagcc actgcttgag ttcctcaggc ttcacagtta taagggaaag accatgatgt 60

tgaatgacaa agttcaaagc ctggattctc tccaacatgt tttgagaaaa gcagaagagt 120

atctgatttc agttgctcct gaaacaccct aactcggaat tcgagaaaca gattccggga 180

gattggtctg gagagggggt ggggtgacat gncgancgtg tcctcgagat gatccagttc 240

tctggacttc ttgangcact gaccttg 267

<210> 2332
<211> 152
<212> nucleic acid
<213> Glycine max

<400> 2332

tgcagccact gcttgaattc ctcaggcttc acagttataa gggaaagacc atgatgttga 60

atgacaaagt tcaaagcctg gattctctcc agcatgtttt gagaaaagca gaagagtatc 120

tgacttcagt tgctcctgaa acaccctact ca 152

<210> 2333
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2333

ctctccaaca tgttttgaga aaagcagaag agtatctgat ttcagttgct cctgaaacac 60

cctactcgga attcgagaac agattccggg agattggtct ggagaggtgg tggggtgaca 120

ctgccgagcg tgtcctcgag atgatccagc ttctcctgga ccttcttgat gcacctgacc 180

cttgcaccct cgagacattc cttggaagag tccctatggt ctataatgtt gttacctttc 240

tccccatggt tactttgccc aagataatgt c 271

<210> 2334
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2334

ctccaacatg tgttgagaaa agcagaagag tatctgattt cagttgctcc tgaaacaccc 60

tactcggaat tcgagaacag attccgggag attggtctgg agagggggtg gggtgacact 120

gccgagcgtg tcctcgagat gatccagctt ctcctggacc ttcttgaggc acctgaccct 180

tgcaccctcg aatcattcct tggaagagtc cctatggtct tcaatgttgt tatcctttct 240

ccccatggtt actttgccca agata 265

<210> 2335
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2335

tgctgagatc attgagcatg gtatatcagg attccacatt gatccttatc atcctgatca 60

agcttcagag ctattggttg aatttttcca aaagagcaag gaggacccag accattggaa 120

gaaaatatct aatggtggtc ttcaaagaat ttatgaaagg tacacttgga agatttattc 180

tgaaaggctt atgacctttg cgggagttta tagtttctgg aaatacgttt ccaaattaga 240

gag 243

<210> 2336
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2336

gctacttgcc atggtggtcc ggctgagatc attgagcatg gtatatcagg attccacatt 60

gatccttatc accctgatca agcttcacag ctattagttg aatttttcca aaagagcaag 120

gaggacccaa gccattggaa gaaaatatct gatggtggtc ttcaaagaat ttatgaaagg 180

tacacgtgga agatttattc cgaaaggctt atgactttgg cgggagttta tagtttctgg 240

aaatacgttt c 251

<210> 2337
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2337

ggagttaccc agtgcacaat cgcgcatgca cttgagaaga caaaatatcc agattcagat 60

ttatattgga agaaatttga ggataaatac cacttttcat gccaatttac tgctgaccta 120

atagccatga ataatgctga ttttataatc accagtacat accaggagat tgcaggaacg 180

aaaatactgt tggccagtat gagagtcaca ctggttttac tcttcctggg ctctataggg 240

ttgt 244

<210> 2338
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2338

gcacaatcgc gcatgcactt gagaagacaa aatatccaga ttcagattta tattggaaga 60

aatttgagga taaataccac ttttcatgcc aatttactgc tgacctaata gccatgaata 120

atgctgattt tatcatcacc agtacatacc aggagattgc aggaacgaaa aatactgttg 180

gccagtatga gagccacgct ggttttactc ttcctgggct ctatagggtt gtccatggca 240

t 241

<210> 2339
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2339

cttctttgag aagtgcaagc ttgacccaac tcactgggac aagatctcaa aggctggtct 60

ccagcgtatt gaagagaagt acacatggca aatttactct cagaggcttc tcactctcac 120

cggtgtctat ggcttctgga agcatgtgtc taaccttgac cgccgtgaga gccgccgcta 180

tctcgagatg ttctatgctc tcaagtaccg caaattggct gagtctgtgc cccttgctgc 240

tgagtaaact gaggataaag agttg 265

<210> 2340
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2340

ggctggtctc cagcgtattg aagagaagta cacatggcaa atttactctc agaggcttct 60

cactctcacc ggtgtctatg gcttctggaa gcatgtgtct aaccttgacc gccgtgagag 120

ccgccgctat ctcgagatgt tctatgctct caagtaccgc aaattggctg agtctgtgcc 180

ccttgctgct gagtaaactg aggataaaga gttggataaa gaaatggagg aaccggcttt 240

ttctttgtac attggagt 258

<210> 2341
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2341

gaagtcttga gatctacaca ggaagccata gttttgccac catgggttgc tctggctgtt 60

cgtccaagac ctggtgtgtg ggagtacctg agagtgaatg tgcacgctct tgttgttgag 120

gagttgcaac ctgctgagta cctgcacttc aaggaagaac ttgttgacgg aagttctaat 180

ggcaactttg tgcttgagtt ggactttgaa ccattcaatg cagccttccc ccgcccaacc 240

cttaacaagt caattggaaa tggtgtgcaa ttcctc 276

<210> 2342
<211> 284
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (9),(142),(218),(222),(224),(237)
<223> unsure at all n locations

<400> 2342

caggaagcna tagttttgcc accatgggtt gctctggctg ttcgtccaag acctggtgtg 60

tgggagtacc tgagagtgaa tgtgcacgct cttgttgttg aggagttgca acctgctgag 120

tacctgcact tcaaggaaga anttgttgac ggaagttcta atggcaactt tgtgcttgag 180

ttggatcttg aaccattgca atgcagcctt cccccgcnca antncttaac aagtcantgg 240

aaatggtgtg caatcctcaa ccgtcacctt ctgccaaact ctcc 284

<210> 2343
<211> 245
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (27),(177)
<223> unsure at all n locations

<400> 2343

gaaaaagtat aacttagttg gtgattntcg ttggattgct gcccaaacaa atagggcacg 60

taatggggag ctgtatcgct acatagcaga cacacaaggt gctttcgttc agcctgcttt 120

ctatgaagct tttggactta cagttgtgga ggccatgaat tgtggactcc ccacttntgc 180

tacttgccat ggtggtccgg ctgagatcat tgagcatggt atatcaggat tccacattga 240

tcctt 245

<210> 2344
<211> 191
<212> nucleic acid
<213> Glycine max

<400> 2344

ggtgctttcg ttcagcctgc tttctatgaa gcttttggac ttacagttgt ggaggccatg 60

aattgtggac tccccacttt tgctacttgc catggtggtc cggctgagat cattgagcat 120

ggtatatcag gattccacat tgatccttat caccctgatc aagcttcaca gctattagtt 180

gaatttttcc a 191

<210> 2345
<211> 257
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (116)
<223>

<400> 2345

ctctccatgg ttactttgcc caagataatg tcttggggta cctgacactg gtggacaggt 60

tgtttacatc ttggatcgag ttcgtgcctt ggagaatgag atgctcaacc gcatcnagaa 120

acaaggcctt gatatcaccc ctcgtattct cattattact cgtcttctcc ctgatgcagt 180

aggaactacc tgtggccaac gtctagagag gtatatgata ctgaatattg tgacattctc 240

cgagttcctt tcagaac 257

<210> 2346
<211> 218
<212> nucleic acid
<213> Glycine max

<400> 2346

gtcttgggat accctgacac tggtggacag gttgtttaca tcttggatca agttcgtgcc 60

ttggagaatg agatgctcaa ccgcatcaag aaacaaggcc ttgatatcac ccctcgtatt 120

ctcattatca ctcgtcttct ccctgatgca gtaggaacta cctgtggcca acgtctagag 180

agggtatatg atactgaata ttgtgacatt ctcagagt 218

<210> 2347
<211> 253
<212> nucleic acid

<213> Glycine max

<400> 2347

ggattccttg cagcccttgc ttgatttcct ccgagctcac aaatacaagg gccatgctct 60

gttgttaaat gatagaatac aaaccatttc caaacttcag tctgcattgg ccaaggctga 120

ggattatctc tctaagcttg cacatgatac actctattca gagtttgaat atgtattgca 180

aggcatgggt tttgagagag gttggggtgc tactgctgaa cgggtattgg agatgatgca 240

tctgctattg gat 253

<210> 2348
<211> 311
<212> nucleic acid
<213> Glycine max

<400> 2348

tcgaacgaga tgaagaagat gtacggcctg atcgagacct acaagttgaa cggccaattc 60

agatggattt catcgcagat gaaccgtgtg aggactggag agctctaccg cgtgatctgc 120

gacaccaggg gtgctttcgt gcagcctgct gtatacgagg cttttggttt gacagtggtt 180

gaggccatga cttgcggctt gccaacattc gccacatgca atggtggtcc tgctgagatc 240

attgtgcacg gcaagtctgg cttccacatt gacccttacc atggtgaccg tgctgctgat 300

ctccttgttg a 311

<210> 2349
<211> 342
<212> nucleic acid
<213> Glycine max

<400> 2349

tggagctttc gtgcagccgg ctatatacga ggcttttcgt ttgacagtgg ttgaggccat 60

gacttgtggg ttgccaacat tcgccacatg caatggtggt cctgctgaga tcattgtgca 120

tggcaagtct ggcttccaca ttgaccctta ccatggtgac cgtgctgctg atctccttgt 180

tgacttcttt gagaagtgca agcttgaccc aacccactgg gaaacaatct caaaggctgg 240

tctccagcgt attgaagaga agtacacatg gcaaatttac tcacagaggc ttctcactct 300

cactggtgtc tatggcttct ggaagcatgt gtctaacctt ga 342

<210> 2350
<211> 305
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (52),(80),(97),(104),(239),(276)
<223> unsure at all n locations

<400> 2350

gcactccaac atgttctgag gaaagctgag gagtatctgg gcacagtgcc tnctgaaact 60

ccctactcag aatttgagcn caagttccag gagattngtt tggngagagg gtggggtgac 120

aacgcggagg tgtgccttga gtcaattcaa cttctcttgg atcttcttga ggcccctgac 180

ccgtgcaccc ttgagacttt ccttggaaga atccctatgg tgttcaatgt tgttattcnt 240

tctccccatg gttactttgc ccaagataat gtcttnggat accctgacac tggtggccag 300

gttgt 305

<210> 2351
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2351

ctgttggaca gtacgaatct cacacagcct tcacccttcc tggactctac cgcgttgtgc 60

atggtattga tgtctttgat ccaaaattca acattgtctc ccctggagct gatcaaacca 120

tttacttccc ccacactgaa accagccgta ggttgacatc cttccaccct gaaatcgaag 180

aactccttta cagctcagtg gagaatgaag aacacatatg tgtgctgaag gaccgcagca 240

agccaattat cttcaccatg gcaaggttgg atcgagt 277

<210> 2352
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2352

caatgttgtt attctttctc cccatggtta ccctgcccaa gataatgtct tgggataccc 60

tgacactggt ggccaggttg tttacatctt ggatcaagtt cgtgctttgg agaatgagat 120

gctccatcgc attaagcaac aaggattgga cattgttcct cgtattctca ttatcacccg 180

tcttctcccc gatgcagtag gaactacttg tggccaacgt cttgagaagg tgttcggaac 240

tgagcactcc cacattcttc gagttccctt tagaactg 278

<210> 2353
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2353

gccatgaacc acacagattt cattatcacc agtaccttcc aggagattgc tggaagcaag 60

gacactgttg gacagtacga atctcacaca gccttcaccc ttcctggact ctaccgcgtt 120

gtgcatggta ttgatgtctt tgatccaaaa ttcaacattg tctcccctgg agctgatcaa 180

accatttact tcccccacac tgaaaccagc cgtaggttga catccttcca ccctgaaatc 240

gaagaactcc tttacagctc agtggagaat gaa 273

<210> 2354
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2354

caaattcaac attgtctccc ctggagctga tcaaaccatt tacttccccc acactgaaac 60

cagccgtagg ttgacatcct tccaccctga aatcgaagaa ctcctttaca gctcagtgga 120

gaatgaagaa cacatatgtg tgctgaagga ccgcagcaag ccaattatct tcaccatggc 180

aaggttggat cgagtgaaga acatcacagg acttgtggag tggtacggta agaacgcgaa 240

ctgagggagc tggtgaacct tgtggttgtt gctggagaca gga 283

<210> 2355
<211> 271
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (25),(47),(49)
<223> unsure at all n locations

<400> 2355

ggcttttggt ttgacagtgg ttgangccat gacttgcggc ttgccancnt tcgccacatg 60

caatggtggt cctgctgaga tcattgtgca cggcaagtct ggcttccaca ttgaccctta 120

ccatggtgac cgtgctgctg atctccttgt tgacttcttt gagaagtgca agcttgaccc 180

aactcactgg gacaagctct caaaggctgg tctccagcgt attgaagaga agtacacatg 240

gcaaatttac tctcagaggc ttctcactct c 271

<210> 2356
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2356

ctgaaatcga agaactcctt tacagctcag tggagaatga agaacacata tgtgtgctga 60

aggaccgcag caagccaatt atcttcacca tggcaaggtt ggatcgagtg aagaacatca 120

caggacttgt ggagtggtac ggtaagaacg cgaactgagg gagctggtga accttgtggt 180

tgttgctgga gacaggagga aggagtcaaa ggacttggaa gaaaaggccg agatgaagaa 240

gatgtacggc ctgatcgaga cctacaagtt gaa 273

<210> 2357
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2357

atcaaaccat ttacttcccc cacactgaaa ccagccgtag gttgacatcc ttccaccctg 60

aaatcgaaga actcctttac agctcagtgg agaatgaaga acacatatgt gtgctgaagg 120

accgcagcaa gccaattatc ttcgccatgg caaggttgga tcgagtgaag aacatcacag 180

gacttgtgga gtggtacggt aagaacgcga agctgaggga gctggtgaac cttgtggttg 240

ttgctggaga caggaggaag gagtcaaagg acttggaa 278

<210> 2358
<211> 325
<212> nucleic acid
<213> Glycine max

<400> 2358

aggagtcgaa ggacttggaa gagaaggccg agatgaagaa gatgtatggc ctcatcgaga 60

cctacaagtt gaacggccaa ttcagatgga tatcctctca gatgaaccgt gtgaggaacg 120

gagagctcta ccgtgtcatc tgtgacacaa ggggtgcctt tgtgcagcct gcagtttatg 180

aggcctttgg gttgactgtg gttgaggcca tgacttgtgg gttgccaacg tttgccacat 240

gcaatggtgg tcctgctgag atcattgtgc atggaaaatc tggttaccac attgatcctt 300

accatggtga ccatgctgct gagat 325

<210> 2359
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2359

ggccatactt ggaaacttac actgaggatg ttgctcatga gcttgccaaa gagttgcaag 60

gcaagccaga tctgattgtc ggaaactaca gtgatggaaa cattgttgcc tctttgttgg 120

cacataaatt aggagtcact caggtaccat tgctcatgca cttgagaaga ccaaataccc 180

cgaatccgac atttactgga aaaaattgga agagagatac cacttctctt gccaattcac 240

agctgatcta tttgccatga accacacaga tttc 274

<210> 2360
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2360

gccaattcag atggatttca tcgcagatga accgtgtgag gaatggagag ctctaccgcg 60

tgatctgcga caccaggggt gctttcgtgc agcctgctgt atacgaggct tttggtttga 120

cagtggttga ggccatgact tgcggcttgc caacattcgc cacatgcaat ggtggtcctg 180

ctgagatcat tgtgcacggc aagtctggct tccacattga ccctaccatg gtgaccgtgc 240

tgctgatctc ctgttgactt ctttgagaag tgcaag 276

<210> 2361
<211> 267
<212> nucleic acid

<213>	Glycine max

<400>	2361

ccgatgcagt aggaactact tgtggccaac gtcttgagaa ggtgttcgga actgagcact 60

cccacattct tcgagttcgc tttagaactg agaagggaat tgttcgcaag tggatctcaa 120

gattcgaagt ctggccctac ttggaaactt acactgagga tgttgcccac gagcttgcca 180

aagagttgca aggcaagcca gatctgattg ttggaaacta cagtgatgga aacattgtcg 240

cttctttgtt ggcacataaa ttaggtg 267

<210>	2362
<211>	263
<212>	nucleic acid
<213>	Glycine max

<400>	2362

ccaagatgta aacaacctgg atcaagttcg tgctttggag aatgagatgc tccatcgcat 60

taagcaacaa ggattggaca ttgttcctcg tattctcatt atcacccgtc ttctccccga 120

tgcagtagga actacttgtg gccaacgtct tgagaaggtg ttcggaactg agcactccca 180

cattcttcga gttcccttta gaactgagaa gggaattgtt cgcaagtgga tctcaagatt 240

cgaagtctgg ccctacttgg aaa 263

<210>	2363
<211>	265
<212>	nucleic acid
<213>	Glycine max

<400>	2363

actcagtgta ccattgctca cgcacttgag aagaccaaat accccgaatc cgacatttac 60

tggaaaaaat tggaagagag ataccacttc tcttgccaat tcacagctga tctatttgcc 120

atgaaccaca cagatttcat tacaagcagt accttccagg agattgctgg aagcaaggac 180

actgttggac agtacgaatc tcacacagcc ttcacccttc ctggactcta ccgcgttgtg 240

catggtattg atgtctttga tccaa 265

<210>	2364
<211>	328
<212>	nucleic acid

<213> Glycine max

<400> 2364

gctcaaccgc atcaagaaac aaggccttga tatcacccct cgtattctca ttattactcg 60

tcttctccct gatgcagtag gaactacctg tggccaacgt ctagagaggg tatatgatac 120

tgaatattgt gacattctcc gagttccttt cagaaccgaa aagggaattg ttcgcaaatg 180

gatctcaaga ttcgaagtct ggccatacct agagacttac actgaggatg ttgcccttga 240

acttgccaag gagttgcaag ccaagccaga tctgatcgtt ggaaactaca gtgatggaaa 300

cattgttgcc tctttgttag cacataaa 328

<210> 2365
<211> 340
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (81),(304),(334)
<223> unsure at all n locations

<400> 2365

ccatggttga ggccatgact tgcggcttgc caacattcgc cacatgcaat ggtggtcctg 60

ctgagatcat tgtgcacggc nagtctggct tccacattga cccttaccat ggtgaccgtg 120

ctgctgatct cctgttgact tctttgagaa gtgcaagctt gacccaactc actgggacaa 180

gatctcaaag gctggtctcc agcgtattga agagaagtac acatggcaaa tttactctca 240

gaggttctca tctcaacggt gtctatggtt ctggaagcat gtgtctaact tgaacgcgtg 300

agancgcgta tctgagagtc tagtctcagt acgnaatggt 340

<210> 2366
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2366

catgagcttg ccaaagagtt gcaaggcaag ccagatctga ttgtcggaaa ctacagtgat 60

ggaaacattg ttgcctcttt gttggctcat aaattaggag tcactcagtg taccattgct 120

catgcacttg agaagaccaa ataccccgaa tccgacattt actggaaaaa attggaagag 180

agatatccact tctcttgcca attcacagct gatctatttg ccatgaacca cacagatttc 240

attatcacca gtaccttcca ggagattgct gga 273

<210> 2367
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2367

gtggtacggt aagaacgcga actgagggag ctggtgaacc ttgtggttgt tgctggagac 60

aggaggaagg agtcaaagga cttggaagaa aaggccgaga tgaagaagat gtacggcctg 120

atcgagacct acaagttgaa cggccaattc agatggattt catcgcagat gaaccgtgtg 180

aggaatggag agctctaccg cgtgatctgc gacaccaggg gtgctttcgt gcagcctgct 240

gtatacgagg cttttggttt ga 262

<210> 2368
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2368

gtggtacggt aagaacgcga agctgaggga gctggtgaac cttgtggttg ttgctggaga 60

caggaggaag gagtcaaagg acttggaaga aaaggccgag atgaagaaga tgtacggcct 120

gatcgagacc tacaagttga acggccaatt cagatggatt tcatcgcaga tgaaccgtgt 180

gaggaatgga gagctctacc gcgtgatctg cgacaccagg ggtgctttcg tgcagcctgc 240

tgtatacgag gcttttggtt tga 263

<210> 2369
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2369

ctggaaaata ttggaagaga gataccactt ctcttgccaa ttcacagctg atctatttgc 60

catgaaccac acagatttca ttatcaccag taccttccag gagattgctg gaagcaagga 120

cactgttgga cagtacgaat ctcacacagc cttcaccctt cctggactct accgcgttgt 180

gcatggtatt gatgtctttg atccaaaatt caacattgtc tcccctggag ctgatcaaac 240

catttacttc cccca 255

<210> 2370
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2370

cttggaagaa aaggccgaga tgaagaagat gtacggcctg atcgagacct acaagttgaa 60

cggccaattc agatggattt catcgcagat gaaccgtgtg aggaatggag agctctaccg 120

cgtgatctgc gacaccaggg gtgctttcgt gcagcctgct gtatacgagg cttttggttt 180

gacagtggtt gaggccatga cttgcggctt gccaacattc gccacatgca atggtggtcc 240

tgctgagatc a 251

<210> 2371
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2371

ccgtcttctc cccgctgcag taggaactac ttgtggccaa cgtcttgaga aggtgttcgg 60

aactgagcac tcccacattc ttcgagttcc ctttagaact gagaagggaa ttgttcgcaa 120

gtggatctca agattcgaag tctggcccta cttggaaact tacactgagg atgttgccca 180

cgagcttgcc aaagagttga aggcaagcca gatctgattg ttggaaacta cagtgatgga 240

aacattgtcg cttctttgtt gg 262

<210> 2372
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2372

cttgaggccc ctgacccttg caccccttgag actttccttg gaagaattcc tatggtcttc 60

aatgttgtca ttctttctcc ccatggttac tttgcccaag ataatgtctt gggccaccct 120

gacactggtg gccaggttgt ttacatcttg gatcaagttc gtgctttgga gaacgagatg 180

ctccatcgca ttaagcaaca aggattggac attgtacctc gtattctcat tatcaccgtc 240

ttctccccga tgcaatcgga actacttgtg gccaacg 277

<210> 2373
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2373

tggaatggag agctctaccg cgtgatctgc gacaccaggg gtgctttcgt gcagcctgct 60

gtatacgagg cttttggttt gacagtggtt gaggccatga cttgcggctt gccaacattc 120

gccacatgca atggtggtcc tgctgagatc attgtgcacg gcaagtctgg cctccacatt 180

gacgcttacc atggtgaccg tgctgctgat ctccttgttg acttctttga gaagtgcacg 240

cttgacccaa ctcac 255

<210> 2374
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2374

ggagagctgt accgtgtgat ctgcgacacc aagggagctt tcgtgcagcc ggctatatac 60

gaggcttttg gtttgacagt ggttgaggcc atgacttgtg ggttgccaac attcgccaca 120

tgcaatggtg gtcctgctga gatcattgtg catggcaagt ctggcttcca cattgaccct 180

taccatggtg accgtgctgc tgatctcctt gttgacttct ttgagaagtg caagcttgac 240

ccaacccact gggaaacaat ctcaaaggc 269

<210> 2375
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2375

tggggtgaca acgcagagcg tgttcttgag tcaattcaac ttctcttgga tcttcttgag 60

gcccctgacc cttgcacccct tgagactttc cttggaagaa ttcctatggt cttcaatgtt 120

gtcattcttt ctccccatgg ttactttgcc caagataatg tcttgggata ccctgacact 180

ggtggccagg ttgtttacat cttggatcaa gttcgtgctt tggagaacga gatgctccat 240

cgcattaagc aacaagga 258

<210> 2376
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2376

ctggagctga tcaaaccatt tacttccccc acactgaaac cacccgtacg ttgacatcct 60

tccaccctga aatcgaagca ctcctttaca gctcagtgga gaatgaagaa cacatatgtg 120

tgctgaagga ccgcagcaag ccaattatct tcaccatggc aaggttggat cgagtgaaga 180

acatcacagg acttgtggag tggtacggta agaacgcgaa ctgagggagc tggtgaacct 240

tgtggttgtt gctggagaca ggaggaagga gtcaa 275

<210> 2377
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2377

tgaaatcgaa gaactccttt acagctcagt ggagaatgaa gaacacatat gtgtgctgaa 60

ggaccgcagc aagccaatta tcttcaccat ggcaaggttg gatcgagtga agaacatcac 120

aggacttgtg gagtggtacg gtaagaacgc gaactcgagg gagctggtga accttgtggt 180

tgttgctgga gacaggagga aggagtcaaa ggacttggaa gaaaaggccg agatgaagaa 240

gatgtacggc ctgat 255

<210> 2378
<211> 289
<212> nucleic acid
<213> Glycine max

<400> 2378

gtcggagaca ggaggaagga gtcgaaggac ttggaagaga aggccgagat gaagaagatg 60

tacggcctga tcgctcccta caagttgaac gggcaattca gatggatttc atctcagatg 120

aaccgtgtga ggaacggaga gctgtaccgt gtgatctgcg acaccaaggg agctttcgtg 180

cagccggcta tatacgaggc ttttggtttg acagtggttg aggccatgac ttgtgggttg 240

ccaacattcg ccacatgcaa tggtggtcct gctgagatca ttgtgcatg 289

<210> 2379
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2379

cgcgtgatct gcgacaccag gggtgctttc gtgcagcctg ctgtatacga ggcttttggt 60

ttgacagtgg ttgaggccat gacttgcggc ttgccaacat tcgccacatg caatggtggt 120

cctgctgaga tcattgtgca cggcaagtct ggcttccaca ttgaccctta ccatggtgac 180

cgtgctgctg atctccttgt tgacttcttt ggaagtgcaa gcttgaccca actcactggg 240

acaagatctc aaaggc 256

<210> 2380
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2380

cttgagaagg tgttcggaac cgagcactcc cacattcttc gagttccctt tagaactgag 60

aagggaattg ttcgtcagtg gatctcaaga ttcgaagtct ggccatactt ggaaacttac 120

actgaggatg ttgctcatga gcttgccaaa gagttgcaag gcaagccaga tctgattgtc 180

ggaaactaca gtgatggaaa cattgttgcc tctttgttgg cacataaatt aggagtcact 240

cagtgtacca ttgctcatgc acttgagaag acc 273

<210> 2381
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2381

acatgagctt gccaaagagt tgcaaggcaa gccagatctg attgtcggaa actacagtga 60

tggaaacatt gttgcctctt tgttggcaca taaattagga gtcactcagt gtaccattgc 120

tcatgcactt gagaagacca aataccccga atccgacatt tactggaaaa aattggaaga 180

gagataccac ttctcttgcc aattcacagc tgatctattt gccatgaacc acacagattt 240

cattatcacc agta 254

<210> 2382
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2382

ttgacagtgg ttgaggccat gacttgcggc ttgccaacat tcgccacatg caatggtggt 60

cctgctgaga tcattgtgca cggcaagtct ggcttccaca ttgaccctta ccatggtgac 120

cgtgctgctg atctccttgt tgacttcttt gagaagtgca agcttgaccc aacccactgg 180

gacaagagct caaaggctgg tctccagcgt attgaagaga agtacacatg gcaaatttac 240

tctca 245

<210> 2383
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2383

gaatggagag ctctaccgcg tgatctgcga caccaggggt gctttcgtgc agcctgctgt 60

atacgaggct tttggtttga cagtggttga cgccatgact tgcggcttgc caacattcgc 120

cacatgcaat ggtggtcctg ctgagatcat tgtgcacggc aagtctggct tccacattga 180

cccttaccat ggtgaccgtg ctgctgatct ccttgttgac ttctttgaga agtgcaagct 240

tgacccaact cac 253

<210> 2384
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2384

cagatctgat tgttggaaac tacagtgatg gaaacattgt cgcttctttg ttggcacata 60

aattaggtgt cactcagtgt accattgctc acgcacttga gaagaccaaa taccccgaat 120

ccgacattta ctggaaaaaa ttggaagaga gataccactt ctcttgccaa ttcacagctg 180

atctatttgc catgaaccac acagatttca ttatcaccag taccttccag ggattgctgg 240

aagcaaggac actgttggac agtacgaatc tcac 274

<210> 2385
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2385

tcgaagaact cctttacagc tcagtggaga atgaagaaca catatgtgtg ctgaaagacc 60

gcagcaagcc aattatcttc accatggcaa ggttggatcg agtgaagaac atcacaggac 120

ttgtggagtg gtacggtaag aacgcgaact gagggagctg gtgaaccttg tggttgttgc 180

tggagacagg aggaaggagt caaaggactt ggaagaaaag gccgagatga agaagatgta 240

cggcctgatc gaga 254

<210> 2386
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2386

aaagactttg atgttgaatg acagaattca aaacccagat gcactccaac atgttctgag 60

gaaagctgag gagtatctgg gcacagtgcc tcctgaaact ccctactcag aatttgagca 120

caagttccag gagattggtt tggagagagg gtggggtgac aacgcagagc gtgttcttga 180

gtcaattcaa cttctcttgg atcttcttga ggcccctgac ccttgcaccc ttgagacttt 240

ccttggaag 249

<210> 2387
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2387

caaaattcaa cattgtctcc cctggagctg atcaaaccat ttacttcccc cacactgaaa 60

ccagccgtag gttgacatcc ttccaccctg aaatcgaaga actcctttac agctcagtgg 120

agaatgaaga acacatatgt gtgctgaagg accgcagcaa gccaattatc ttcaccatgg 180

caaggttgga tcgagtgaag aacatcacag gacttgtgga gtggtacggt aagaacgcga 240

actgagggag ctg 253

<210> 2388
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2388

gggaattgtt cgcaagtgga tctcaagatt cgaagtctgg ccctacttgg aaacttacac 60

tgaggatgtt gcccacgagc ttgccaaaga gttgcaaggc aagccagatc tgattgttgg 120

aaactacagt gatggaaaca ttgtcgcttc tttgttggca cataaattag gtgtcactca 180

gtgtaccatt gctcacgcac ttgagaagac caaatacccc gaatccgaca tttactggaa 240

aa 242

<210> 2389
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2389

gttgcaaggc aagccagatc tgattgttgg aaactacagt gatggaaaca ttgtcgcttc 60

tttgttggca cataaattag gtgtcactca gtgtaccatt gctcacgcac ttgagaagac 120

caaatacccc gaatccgaca tttactggaa aaaattggaa gagagatacc acttctcttg 180

ccaattcaca gctgatctat ttgccatgaa ccacacagat ttcattatca ccag 234

<210> 2390
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2390

accgcgttgt gcatggtatt gatgtctttg atccaaaatt caacattgtc tcccctggag 60

ctgatcaaac catttacttc ccccacactg aaaccagccg taggttgaca tccttccacc 120

ctgaaatcga agaactcctt tacagctcag tggagaatga agaacacata tgtgtgctga 180

aggaccgcag caagccaatt atcttcacca tggcaaggtt ggatcgagtg aagaacatc 239

<210> 2391
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2391

attctccccg atgcaatcgg aactacttgt ggccaacgtc ttgagaaggt gttcggaacc 60

gagcactccc acattcttcg agttcccttt agaactgaga agggaattgt tcgtcagtgg 120

atctcaagat tcgaagtctg gccatacttg gaaacttaca ctgaggatgt tgctcatgag 180

cttgccaaag agttgcaagg caagccagat ctgattgtcg gaaactacag tgatggaaac 240

attgatgcct ctttgttggc acataaa 267

<210> 2392
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2392

cgtagtagct cggaatcgct cgagctcgag cggatgtctt tgatccaaaa ttcaacattg 60

tctcccctgg agctgatcaa accatttact tcccccacac tgaaaccagc cgtaggttga 120

catccttcca ccctgaaatc gaagaactcc tttacagctc agtggagaat gaagaacaca 180

tatgtgtgct gaaggaccgc agcaagccaa ttatcttcac catggcaagg ttggaccgag 240

tgaagaacat cacaggactt gtggagtggt 270

<210> 2393
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2393

acaggaggaa ggagtccaag gacttggaag agaaggccga gatgaagaag atgtatggcc 60

tcatcgagac ctacaagttg aacggccaat tcagatggat ctcctctcag atgaaccgtg 120

tgaggaacgg agagctctac cgtgtcatct gtgacacaag ggtgcctttt gtgcagcctg 180

cagtttatga ggcctttggg ttgactgtgg ttgaggccat gacttgtggg ttaccaacat 240

ttgccacatg caatggtggt cctgctgaga tcattgtgca tgga 284

<210> 2394
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2394

cgcgttgtgc atggtattga tgtctttgat ccaaaattca acattgtctc ccctggagct 60

gatcaaacca tttacttccc ccacactgaa accagccgta ggttgacatc cttccacccct 120

gaaatcgaag aactccttta cactcagtgg agaatgaaga acacatatgt gtgctgaagg 180

accgcagcaa gccaattatc ttcaccatgg caaggttgga tcgagtgaag aacatcacag 240

gacttgt 247

<210> 2395
<211> 247
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (70)
<223>

<400> 2395

agagatacca cttctctcgc caattcacag ctgatctatt tgccatgaac cacacagatt 60

tcattatcan cagtaccttc caggagattg ctggaagcaa ggacactgtt ggacagtacg 120

aatctcacac agcctcaccc ttcctggact ctaccgcgtt gtgcatggta ttgatgtctt 180

tgatccaaaa ttcaacattg tctcccctgg agctgatcaa accatttact tcccccacac 240

tgaaacc 247

<210> 2396
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2396

ggttgacctc cttccacccc gaaatcgaag aacttcttta cagctctgtg gagaatgaag 60

aacacatatg cgtgctgaag gaccgcagca agccgattat cttcaccatg gcaaggttgg 120

accgtgtgaa gaacatcaca gactcgtgga gtggtacggt aagaacgcga actgaaggga 180

gttggtgaac cttgtggttg ttgccggaga caggaggaag gagtcgaagg acttggaaga 240

gaaggctgag atgaagaaga tgtacggcct gatcgagac 279

<210> 2397
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2397

cttgtggcga acgtcttgag aaggtgttcg gaactgagca ctcccacatt cttcgagttc 60

gctttagaac tgagaaggga attgttcgca agtggatctc aagattcgaa gtctggccct 120

acttggaaac ttacactgag gatgttgccc acgagcttgc caaagagttg caaggcaagc 180

cagatctgat tgttggaaac tacagtgatg gaaacattgt cgcttctttg ttggcacata 240

aattaggtgt cactcagtgt 260

<210> 2398
<211> 210
<212> nucleic acid
<213> Glycine max

<400> 2398

gtcggaaact acagtgatgg aaacattgtt gcctctttgt tggcacataa attaggagtc 60

actcagtgta ccattgctca tgcacttgag aagaccaaat accccgaatc cgacatttac 120

tggaaaaaat tggaagagag ataccacttc tcttgccaat tcacagctga tctatttgcc 180

atgaaccaca cagatttcat tatcaccagt 210

<210> 2399
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2399

catgagcttg ccaaagagtt gcaaggcaag ccagatctga ttgtcggaaa ctacagtgat 60

ggaaacattg ttgcctcttt gttggcacat aaattaggag tcactcagtg taccattgct 120

catgcacttg agaagaccaa ataccccgaa tccgacattt actggaaaaa attggaagag 180

agataccact tctcttgcca attcacagct gatctatttg ccatgaacca cacagatttc 240

att 243

<210> 2400
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2400

cgagatgctc catcgcatta agcaacaagg attggacatt gtacctcgta ttctcattat 60

cacccgtctt ctccccgatg caatcggaac tacttgtggc caacgtcttg agaaggtgtt 120

cggaaccgag cactcccaca ttcttcgagt tccctttaga actgagaagg gaattgttcg 180

tcagtggatc tcaagattcg aagtctggcc atacttggaa acttacactg aggatgttgc 240

tcatgagctt gccaaag 257

<210> 2401
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2401

atgtgtattg aaggaccgca acaagccgat catcttcacc atggcaagac ttgaccgtgt 60

gaagaacatc acgggacttg tggagtggta tggcaagaat gcgcgcctcc gcgagttggt 120

aaacctcgtg gtggtggccg gagacaggag gaaggagtcc aaggacttgg aagagaaggc 180

cgagatgaag aagatgtatg gcctcatcga gacctacaag ttgaacggcc aattcagatg 240

gatctcctct cagatgaacc gtgtgaggaa cggagagctc taccgt 286

<210> 2402
<211> 275
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (25)
<223>

<400> 2402

cctccttcca ccccgaaatc gaagncactt ctttacagct ctgtggagaa tgaagaacac 60

atatgcgtgc tgaaggaccg cagcaagccg attatcttca ccatggcaag gttggaccgt 120

gtgaagaaca tcacaggact cgtggagtgg tacggtaaga acgcgaactg agggagttgg 180

tgaaccttgt ggttgttgcc ggagacagga ggaaggagtc gaaggacttg gaagagaagg 240

ctgagatgaa gaagatgtac ggcctgatcg agacc 275

<210> 2403
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2403

gtggttgttg ccggagacag gaggaaggag tcgaaggact tggaagagaa ggccgagatg 60

aagaagatgt acggcctgat cgagacctac aagttgaacg ggcaattcag atggatttca 120

tctcagatga accgtgtgag gaacggagag ctgtaccgtg tgatctgcga caccaaggga 180

gctttcgtgc agccggctat atacgaggct tttggtttga cagtggttga ggccatgact 240

tgtgggttg 249

<210> 2404
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2404

gaaccgagca ctcccacatt cttcgagttc cctttagaac tgagaaggga attgttcgtc 60

agtggatctc caagattcga agtctggcca tacttggaaa cttacactga ggatgttgct 120

catgagcttg ccaaagagtt gcaaggcaag ccagatctga ttgtcggaaa ctacagtgat 180

ggaaacattg ttgcctcttt gttggcacat aaattaggag tcactcagtg taccattgct 240

catgcacttg agaagaccaa ataccccgaa t 271

<210> 2405
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2405

gataatgtct tgggataccc tgacactggt ggccaggttg tttacatctt ggatcaagtt 60

cgtgctttgg agaacgagat gctccatcgc attaagcaac aaggattgga cattgtacct 120

cgtattctca ttatcacccg tcttctcccc gatgcaatcg gtactacttg tggccaacgt 180

cttgagaagg tgttcggaac cgagcactcc cacattcttc gagttctctt tagaactgag 240

aagggaattg t 251

<210> 2406
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2406

ggtggggtga caacgcagag cgtgttcttg agtcaattca acttctcttg gatcttcttg 60

aggcccctga cccttgcacc cttgagactt tccttggaag aattcctatg gtcttcaatg 120

ttgtcattct ttctccccat ggttactttg cccaagataa tgtcttggga taccctgaca 180

ctggtggcca ggttgtttac atcttggatc aagttcgtgc tttggagaac gagatgctcc 240

atcgcat 247

<210> 2407
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2407

tgagaggggg tggggtgaca ctgccgagcg tgtcctcgag atgatccagc ttctcctgga 60

ccttcttgag gcacctgacc cttgcaccct cgagacattc cttggaagag tccctatggt 120

cttcaatgtt gttatccttt ctccccatgg ttactttgcc caagataatg tcttgggata 180

ccctgacact ggtggacagg ttgtttacat cttggatcaa gttcgtgcct tggagaatga 240

gatgctcaac cgcatcaaga aacaaggcct tgatatcacc cc 282

<210> 2408
<211> 309
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (13),(21),(68),(138),(140),(151),(222),(257),(294)

<223> unsure at all n locations

<400> 2408

catcactgta gtntccaaca ntcagatctg gaaacattgt tgcctctttg ttagcacata 60

aattaggngt aactcagtgt accattgctc atgctctaga aaagaccaag taccctgagt 120

ctgacattta ctggaaanan tttgaagaga natatcattt ctcatgccaa tttactgctg 180

atctttttgc aatgaaccac acagacttta tcatcaccag cnccttccaa gagattgctg 240

gaagcaagga cactgtngga cagtatgaga gtcacactgc cttcaccctt ccangacttt 300

accgtgttg 309

<210> 2409
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2409

ctggactcta ccgtgttgtg cacggcattg atgtctttga tccaaaattc aacattgtct 60

cccctggagc tgatcaaacc atttacttcc cccccaccga aactagccgt aggttgacct 120

ccttccaccc cgaaatcgaa gaacttcttt acagctctgt ggagaatgaa gaacacatat 180

gcgtgctgaa ggaccgcagc aagccgatta tcttcaccat ggcaaggttg gaccgtgtga 240

agaacatcac a 251

<210> 2410
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2410

cacagatttc attatcacca gtaccttcca ggagattgct ggaagcaagg acactgttgg 60

acagtatgag tctcacacag cctttaccct tcctggactc taccgtgttg tgcacggcat 120

tgatgtcttt gatccaaaat tcaacattgt ctcccctgga gctgatcaaa ccatttactt 180

ccccccccacc gaaactagcc gtaggttgac ctccttccac cccgaaatcg aagaacttct 240

ttacagct 248

<210> 2411

<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2411

tggagacagg aggaaggagt caaaggactt ggaagaaaag gccgagatga agaagatgta 60

cggcctgatc gagacctaca agttgaacgg ccaattcaga tggatttcat cgcagatgaa 120

ccgtgtgagg atggagagct ctaccgcgtg atctgcgaca ccaggggtgc tttcgtgcag 180

cctgctgtat acgaggcttt tggtttgaca gtggttgagg ccatgacttg cggcttgcca 240

acattcgcca 250

<210> 2412
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2412

caaaacccag atgcactcca acatgttctg aggaaagctg aggagtatct gggcacagtg 60

cctcctgaaa ctccctactc agaatttgag gacaagttcc aggagattgg tttggcgaga 120

gggcggggtg acaagcagag cgtgttcttg agtcaattca acttctcttg gatcttcttg 180

aggcccctga cccttgcacc cttgagactt tccttggaag aattcctatg gtcttcaatg 240

ttgtcattct ttc 253

<210> 2413
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2413

cagatctgat tgttggaaac tacagtgatg gaaacattgt cgcttctttg ttggcacata 60

aattaggtgt cactcagtgt accattgctc acgcacttga gaagaccaaa taccccgaat 120

ccgacattta ctggaaaata ttggaagaga gataccactt ctcttgccaa ttccccgctg 180

atctatttgc catgaaccac acagatttca ttatcaccag taccttccag gagattg 237

<210> 2414
<211> 264
<212> nucleic acid

<213> Glycine max

<400> 2414

tagcaatgac actgttggac agtatgagtc tgacacagcc tttacccttc ctggactcta 60

ccgtgttgtg cacggcattg atgtctttga tccaaaattc aacattgtct ccccggagct 120

gatcaaacca tttacttccc ccccaccgaa actagccgta ggttgacctc cttccacccc 180

gaaatcgaag aacttcttta cagctctgtg gagaatgaag aacacatatg cgtgctgaag 240

gaccgcagca agccgattat cttc 264

<210> 2415
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2415

gaagaacaca tatgcgtgct gaaggaccgc agcaagccga ttatcttcac catggcaagg 60

ttggaccgtg tgaagaacat cacaggactc gtggagtggt acggtaagaa cgcgaactga 120

gggagttggt gaaccttgtg gttgttgccg gagacaggag gaaggagtcg aaggacttgg 180

aagagaaggc cgagatgaag aagatgtacg gcctgatcga gacctacaag ttgaacgggc 240

aattca 246

<210> 2416
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2416

ttcacagctg atctatttgc catgaaccac acagatttca ttattaccag taccttccag 60

gagattgctg gaagcaagga cactgttgga cagtatgagt ctcacacagc ctttaccctt 120

cctggactct accgtgttgt gcacggcatt gatgtctttg atccaaaatt caacattgtc 180

tcccctggag ctgatcaaac catttacttc ccccccaccg aaactagccg taggttgacc 240

tccttcc 247

<210> 2417
<211> 257
<212> nucleic acid

<213> Glycine max

<220>
<221> unsure
<222> (59)
<223>

<400> 2417

gccatgaacc acacagattt cattatcacc agtaccttcc aggagattgc tggaagcang 60

gacactgttg gacagtatga gtctcacaca gcctttaccc ttcctggact ctaccgtgtt 120

gtgcacggca ttgatgtctt tgatccaaaa ttcaacattg tctcccctgg agctgatcaa 180

accatttact tcccccccac cgaaactagc cgtagttgac ctccttccac cccgaaatcg 240

aagaacttct ttacagc 257

<210> 2418
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2418

cggcactgat gtctttgatc caaaattcaa cattgtatcc cctggagctg atcaaaccat 60

ttacttcccc cccaccgaaa ctagccgtag gttgacctcc ttccaccccg aaatcgaaca 120

acttctttac agctctgtgg agaatgaaga acacatatgc gtgctgaagg accgcagcaa 180

gccgattatc ttcaccatgg caaggttgga ccgtgtgaac gacatcacag gactcgtgga 240

gtggtac 247

<210> 2419
<211> 267
<212> nucleic acid
<213> Glycine max

<400> 2419

gccaattcag atggatatcc tctcagatga accgtgtgag gaacggagag ctctaccgtg 60

tcatctgtga cacaaggggt gcctttgtgc agcctgcagt ttatgaggcc tttgggttga 120

ctgtggttga ggccatgact tgtgggttgc caacgtttgc cacatgcaat ggtggtcctg 180

ctgagatcat tgtgcatgga aaatctggtt accacattga tccttaccat ggtgaccatg 240

ctgctgagat ccttgttgag ttctttg 267

<210> 2420
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2420

gtgacaacgc agagcgtgtt cttgagtcaa ttcaacttct cttggatctt cttgaggccc 60

ctgacccttg caccсttgag actttccttg gaagaattcc tatggtcttc aatgttgtca 120

ttctttctcc ccatggttac tttgcccaag ataatgtctt gggataccct gacactggtg 180

gccaggttgt ttacatcttg gatcaagttc gtgctttgga gaacgagat 229

<210> 2421
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2421

gtcaaaggac ttggaagaaa aggccgagat gaagaagatg tacggcctga tcgagaccta 60

caagttgaac ggccaattca gatggatttc atcgcagatg aaccgtgtga ggaatggaga 120

gctctaccgc gtgatctgcg acaccagggg tgctttcgtg cagcctgctg tatacgaggc 180

ttttggtttg acagtggttg aggccatgac ttgcggcttg ccaagattcg ccacatgcaa 240

tgtgggtcct gctgagatca ttgtg 265

<210> 2422
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2422

ggaagagaga taccacttct cttgccaatt cacagctgat ctatttgcca tgaaccacac 60

agatttcatt atcaccagta ccttccagga gattgctgga agcaaggaca ctgttggaca 120

gtacgaatct cacacagcct tcacccttcc tggactctac cgcgttgtgc atggtattga 180

tgtctttgat ccaaaattca acattggctc ccctggagct gatcatacca tttacttccc 240

ccacactgaa 250

<210> 2423
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2423

ataccacttc tcttgccaat tcacagctga tctatttgcc atgaaccaca cagatttcat 60

tatcaccagt accttccagg agattgctgg aagcaaggac actgttggac agtatgagtc 120

tcacacagcc tttacccttc ctggactcta ccgtgttgtg cacggcattg atgtctttga 180

tccaaaattc aacattgtct cccctggagc tgatcaaacc atttacttcc cccccac 237

<210> 2424
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2424

gcgtgctgaa ggaccgcagc aagccgatta tcttcaccat ggcaaggttg gaccgtgtga 60

agaacatcac aggactcgtg gagtggcacg gtaagaacgc gaactgaggg agttggtgaa 120

ccttgtggtt gttgccggag acaggaggaa ggagtcgaag gacttggaag agaaggccga 180

gatgaagaag atgtacggcc tgatcgagac ctacaagttg aacgggcaat tcagatggat 240

ttcatctcag atgaaccgtg tgaggaacgg agagctgtac cg 282

<210> 2425
<211> 313
<212> nucleic acid
<213> Glycine max

<400> 2425

gtacgtaagt tcggtctacg gctcgttcag catcgacatc ctctcacatg aactgtgtga 60

cgaacggaga gctctaccgt gtcatctgtg acacaagggg tgcctttgtg cagcctgcag 120

tttatgaggc ctttgggtac actgtggttg aggccatgac ttgtgggttg ccaacgtttg 180

ccacatgcaa tggtggtcct gctgagatca ttgtgcatgg aaaatctggt taccacattg 240

atccttacca tggtgaccat gctgctgaga tccttgttga gttctttgag aagagcaagg 300

ctgatccatc tca 313

<210> 2426
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2426

gagaatgagg aacacatatg cgtattgaag gaccgcaaca aaccaataat cttcaccatg 60

gcaaggcttg accgtgtgaa gaacatcacg gggcttgtcg agtggtacgg gaagaacgca 120

cgcctccgcg agttggtgaa cctggtggtg gtggctggag acaggaggaa ggagtcgaag 180

gacttggaag agaaggccga gatgaagaag atgtatggcc tcatcgagac ctacaagttg 240

aacggccaat tcagatggat atcctctcag a 271

<210> 2427
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2427

aaaccattta cttccccccc accgaaacta gccgtaggtt gacctccttc caccccgaaa 60

tcgaagaact tctttacagc tctgtggaga atgaagaaca catatgcgtg ctgaaggacc 120

gcagcaagcc gcttatcttc accatggcaa ggttggaccg tgtgaagaac atcacaggac 180

tcgtggagtg gtacggtaag aacgcgaact cgagggagtt ggtgaacctt gtggttgttg 240

ccggagacag gaggaagg 258

<210> 2428
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2428

tacaagttga acggccaatt cagatggata tcctctcaga tgaaccgtgt gaggaacgga 60

gagctctacc gtgtcatctt cgacacaagg ggtgcctttg tgcagcctgc agtttatgag 120

gcctttgggt tgactgtggt tgacgccatg acttgtgggt tgccaacgtt tgccacatgc 180

aatggtggtc ctgctgagat cattgtgcat ggaaaatctg gttaccacat tgatccttac 240

catggtgacc atgctgctga gat 263

<210> 2429
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2429

ggaagtaaat ggtttgatca gctccagggg agacatcctt ccaccctgaa atcgaagaac 60

tcctttacag ctcagtggag aatgaagaac acatatgtgt gctgaaggac cgcagcaagc 120

caattatctt caccatggca aggttggatc gagtgaagaa catcacagga cttgtggagt 180

ggtacggtaa gaacgcgaac tcgagggagc tggtgaacct tgtggttgtt gctggagaca 240

ggaggaagga gt 252

<210> 2430
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2430

gggaaagact ttgatgttga atgacagcct tcaaaaccca gatgcactcc aacatgttct 60

gaggcaagct gaggagtatc tgggcacagt gcctcctgaa actccctact cagaatttga 120

gcacaagttc caggagattg gtttggagag agggtgcggt gacaacgcag agcgtgttct 180

tgagtcaatt caacttctct tggatcttct tgaggcccct gacccttgca ccct 234

<210> 2431
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2431

gtgacattct cagagttcct ttcagaacag aaaagggaat tgttcgcaaa tggatctcaa 60

gattcgaagt ctggccatac ctagagactt acactgagga tgtcgccctt gaacttgcca 120

aggagttgca agccaagcca gatctgattg ttggaaacta cagtgatgga aacattgttg 180

cctctttgtt agcacataaa ttaggagtaa ctcagtgtac cattgctcat gctctagaaa 240

agaccaagta ccctgagtct gacatt 266

<210> 2432
<211> 276

<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (144)
<223>

<400> 2432

gcctgagtct gacatttact ggaaaaaatt tgaagagaaa tatcatttct catgccaatt 60

tactgctgat ctttttgcaa tgaaccacac agactttatc atcaccagca ccttccaaga 120

gattgctgga agcaaggaca ctgntggaca gtatgagagt cacactgcct tcacccttcc 180

aggactttac cgtgttgttc acggtattga tccatttgat ccaaagttca acattgtctc 240

tcccggtgca gacatgggta tatacttccc atacac 276

<210> 2433
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2433

tcgagaccta caagttgaac ggccaattca gatggatatc ctctcagatg aaccgtgtga 60

ggaacggaga gctctaccgt gtcatctgtg acacaagggg tgcctttgtg cagcctgcag 120

tttatgaggc ctttgggttg actgtggttg aggccatgac gtgtgggttg ccaacgtttg 180

ccacatgcaa tggtggtcct gctgagatca ttgtgcatgg aaaatctggt taccacattg 240

atccttacca tggtgaccat gctgctga 268

<210> 2434
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2434

gcgtattgaa ggaccgcaac aaaccaataa tcttcaccat ggcaaggctt gaccgtgtga 60

agaacatcac ggggcttgtc gagtggtcgg gaagaacgca cgcctccgcg agttggtgaa 120

cctggtggtg gtggctggag acaggaggaa ggcgtcgaag gacttggaag agaaggccga 180

gatgaagaag atgtatggcc tcatcgagac ctacaagttg aacggccaat tcagatggat 240

atcctctcag atgaaccgtg tgaggaacgg agagctcta 279

<210> 2435
<211> 222
<212> nucleic acid
<213> Glycine max

<400> 2435

cgttgtttac atcttggatc acgttcgtgc tttggagatt gagatgctcc atcgcattaa 60

gcaacaagga ttggacattg ttcctcgtat tctcattatc acccgtcttc tccccgatgc 120

agtaggaact acttgtggcc aacgtcttga gaaggtgttc ggaactgagc actcccacat 180

tcttcgagtt ccctttagaa ctgagaaggg aattgttcgc aa 222

<210> 2436
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2436

atggatctca agattcgaag tctggccata cctagagact tacactgagg atgtcgccct 60

ggaacttgcc aaggagttgc aagccaagcc agatctgatt gttggaaact acagtgatgg 120

aaacattgtt gcctctttgt tagcacataa attaggagta actcagtgta ccattgctca 180

tgctctagaa aagaccaagt accctgagtc tgacatttac tggaaaaaat ttgaagagaa 240

atatcatttc tcatgccaa 259

<210> 2437
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2437

gtccaaggac ttggaagaga aggccgagat gaagaagatg tatggcctca tcgagaccta 60

caagttgaac ggccaattca gatggatctc ctctcagatg aaccgtgtga ggaacggaga 120

gctctaccgt gtcatctgtg acacaagggg tgcctttgtg cagcctgcag tttatgaggc 180

ctttgggttg actgtggttg aggccatgac ttgtgggtta ccaacatttg ccacatgcaa 240

tggtggtcct g 251

<210> 2438
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2438

ggagagctgt accgtgtgat ctgcgacacc aatggagctt tcgtgcagcc ggctatatac 60

gaggcttttg gcttgacact ggttgaagcc atgacttgta ggttgccaac attcgccaca 120

tgcaatggtg gtcctgctga gatcattgtg catggcaagt ctggcttcca cattgacccct 180

taccatggtg accgtgctgc ggatctccct gctgacttct ttgagaagtg caagcttgac 240

ccaacccact ggg 253

<210> 2439
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2439

cccatggtta ctttgcccaa gataatgtct tgggataccc tgacactggt ggccaggttg 60

tttacatctt ggatcaagtt cgtgctttgg agaacgagat gctccatcgc attaagcaac 120

aaggattgga cattgtacct cgtattctca ttatcacccg tcttctcccc gatgcaatcg 180

gaactacttg tggccaacgt cttgagaagg tgttcggaac cgagcactc 229

<210> 2440
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2440

gccgagatga agaagatgta tggcctcatc gagacctaca agttgaacgg ccaattcaga 60

tggatatcct ctcagatgaa ccgtgtgagg aacggagagc tctaccgtgt catctgtgac 120

acaaggggtg cctttgtgca gcctgcagtt tatgaggcct ttgggttgac tgtggttgag 180

gccatgactt gtgggttgcc aacgtttgcc acatgcaatg gtggtcctgc tgagatcatt 240

gtgcatggaa aatctggtta 260

<210> 2441

<211> 250
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (189)
<223>

<400> 2441

tggaaacatt gttgcctctt tgttggcaca taaattagga gtcactcagt gtaccattgc 60

tcatgcactt gagaagacca aataccccga atccgacatt tactggaaaa aattggaaga 120

gagataccac ttctcttgcc aattcacagc tgatctattt gccatgaacc acacagattt 180

catcacaanc agtaccttcc aggagattgc tggactgcag gacactgttg gacagtatga 240

gtctcacaca 250

<210> 2442
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2442

gcttctttac agctcagtgg agaatgagga acacatatgc gtattgaagg accgcaacaa 60

accaataatc ttcaccatgg caaggcttga ccgtgtgaag aacatcacgg ggcttgtcga 120

gtggtacggg aagaacgcac gcctccgcga gttggtgaac ctggtggtgg tggctggaga 180

caggaggaag gagtcgaagg acttggaaga gaaggccgag atgaagaaga tgtatggcct 240

catcgagacc tacaagttg 259

<210> 2443
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2443

aaggacttgg aagagaaggc cgagatgaag aagatgtatg gcctcatcga gacctacaag 60

ttgaacggcc aattcagatg gatctcctct cagatgaacc gtgtgaggaa cggagagctc 120

taccgtgtca tctgtgacac aaggggtgcc tttgtgcagc ctgcagttta tgaggccttt 180

gggttgactg tggttgaggc catgacttgt gggttaccaa catttgccac atgcaatggt 240

ggtc 244

<210> 2444
<211> 220
<212> nucleic acid
<213> Glycine max

<400> 2444

cccccacact gaaaccagcc gtaggttgac atccttccac cctgaaatcg aagaactcct 60

ttacagctca gtggagaatg aagaacacat atgtgtgctg aaggaccgca gcaagccaat 120

tatcttcacc atggcaaggt tggatcgagt gaagaacatc acaggacttg tggagtggta 180

cggtaagacc gcgaactgga gggacctgga aaaccttggg 220

<210> 2445
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2445

caagtaccct gagtctgaca tttactggaa aaaatttgaa gagaaatatc atttctcatg 60

ccaatttact gctgatcttt ttgcaatgaa ccacacagac tttatcatca ccagcacctt 120

ccaagagatt gctggaagca aggacactgt tggacagtat gagagtcaca ctgccttcac 180

ccttccagga ctttaccgtg ttgttcacgg tattgatcca tttgatccaa agttcaacat 240

tgtctctc 248

<210> 2446
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2446

cacggggctt gtcgagtggt acgggaagaa cgcacgcctc cgcgagttgg tgaacctggt 60

ggtggtggct ggagacagga ggaaggagtc gaaggacttg gaagagaagg ccgagatgaa 120

gaagatgtat ggcctcatcg agacctacaa gttgaacggc caattcagat ggatatcctc 180

tcagatgaac cgtgtgagga acggagagct ctaccgtgtc atctgtgaca caaggggtgc 240

tcctgtgcag cctgcagttt at 262

<210> 2447
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2447

gaacttgcca aggagttgca agccaagcca gatctgattg ttggaaacta caatgatgga 60

aacattgttg cctctttgtt agcacataaa ttaggagtaa ctcagtgtac cattgctcat 120

gctctagaaa agaccaagta ccctgagtct gacatttact ggaaaaaatt tgaagagaaa 180

tatcatttct catgccaatt tactgctgat ctttttgcaa tgaaccacac agactttatc 240

atcaccagga ccttccaaga gattgctgga agc 273

<210> 2448
<211> 290
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (4),(28),(53),(66),(75),(77),(79),(92)...(93),(106),
(126)...(127),(153)
<223> unsure at all n locations

<400> 2448

taancagatt gatccttacc atggtganca tgctgctgag atccttgttg agntctttga 60

gaagancaag gctgntncnt ctcactggga cnnaatctcc cagggnggac tcaagcgtat 120

tcatgnnaag tacacatggc aaatttactc ggncaggctc ttgacactca ctggtgtgta 180

tggcttctgg aagcacgtga ccaatcttga acgccgtgag agcaaacgtt acctcgagat 240

gttctatgct ctcaagtacc gcaaattggc tgagtctgtg ccccttgcta 290

<210> 2449
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2449

gaagaacgca cgcctccgcg agttggtgaa cctggtggtg gtggctggag acaggaggaa 60

ggagtcgaag gacttggaag agaaggccga gatgaagaag atgtatggcc tcatcgagac 120

ctacaagttg aacggccaat tcagatggat atcctctcag atgaaccgtg tgaggaacgg 180

agagctctac cgtgtcatct gtgacacaag gggtgccttt gtgcagcctg cagtttatga 240

ggcctttggg ttgactg 257

<210> 2450
<211> 304
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (165),(169)
<223> unsure at all n locations

<400> 2450

aggtgaccat gctgctgaga tccttgttga gttctttgag aagagcaagg ctgatccatc 60

tcactgggac aaaatctccc agggtggact caagcgtatt catgagaagt acacatggca 120

aatttactcg gacaggctct tgacactcac tggtgtgtat ggctncgana agcacgtgac 180

caatcttgaa cgccgtgaga gcaaacgtta cctcgagatg ttctatgctc tcaagtaccg 240

caaattggct gagtctgtgc cccttgctat tgaagagtaa attcatgttt gaagagaaca 300

tcaa 304

<210> 2451
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2451

agaaggccga gatgaagaag atgtatggcc tcatcgagac ctacaagttg aacggccaat 60

tcagatggat atcctctcag atgaaccgtg tgagaaacgg agagctctac cgtgtcatct 120

gtgacacaag gggtgccttt gtgcagcctg cagtttatga ggcctttggg ttgactgtga 180

gataggccat gacttgtggg ttgccaacgt ttgccacatg caatggtggt cctgctgaga 240

tcattgtg 248

<210> 2452
<211> 255
<212> nucleic acid

<213> Glycine max

<400> 2452

agaacatcac ggggcttgtc gagtggtacg ggaagaacgc acgcctccgc gagttggtga 60

acctggtggt ggtggctgga gacaggagga aggagtcgaa ggacttggaa gagaaggccg 120

agatgaagaa gatgtatggc ctcatcgaga cctacaagtt gaacggccaa ttcagatgga 180

tatcctctca gatgaaccgt gtgaggaacg gagagctcta ccgtgtcatc tgtgacacaa 240

ggggtgcctt tgtgc 255

<210> 2453
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2453

gaagaacatc acggggcttg tcgagtggta cgggaagaac gcacgcctcc gcgagttggt 60

gaacctggtg gtggtggctg gagacaggag gaaggagtcg aaggacttgg aagagaaggc 120

cgagatgaag aagatgtatg gcctcatcga gacctacaag ttgaacggcc aattcagatg 180

gatatcctct cagatgaacc gtgtgaggaa cggagagctc taccgtgtca tctgtgacac 240

aaggggtgcc tttgtgcag 259

<210> 2454
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2454

gctcgcagct ggcctcatcg agacctacaa gttgaacggc caattcagat ggatatcctc 60

tcagatgaac cgtgtgagga acggagagct ctaccgtgtc atctgtgaca caaggggtgc 120

ctttgtgcag cctgcagttt atgaggcctt tgggttgact gtggttgagg ccatgacttg 180

tacggttgcc aacgtttgcc acatgcaatg gtggtcctgc tgacatcact gtgcatggaa 240

aatctggtta ccacattgat ccttaccatg gtgacc 276

<210> 2455
<211> 231
<212> nucleic acid

<213> Glycine max

<400> 2455

cacagcgtca agggaaagac tttgatgttg aatgacagaa ttcaaaaccc agatgcactc 60

caacatgttc tgaggcaagc tgaggagtat ctgggcacag tgcctcctga aactccctac 120

tcagaatttg agcacaagtt ccaggagatt ggtttggcga gagggtgcgg tgacaacgca 180

gagctagttc ttgagtccat tcaacttctc taggatctac ttgaggcgcc t 231

<210> 2456
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2456

gaaaagacca agtaccctga gtctgacatt tactggaaaa aatttgaaga gaaatatcat 60

ttctcatgcc aatttactgc tgatcttttt gcaatgaacc acacagactt tatcatcacc 120

agcaccttcc aagagattgc tggaagcaag gacactgttg gacagtatga gagtcacact 180

gccttcaccc ttccaggact ttaccgtgtt gttcacggta ttgatccatt tgatcaaagt 240

tcaac 245

<210> 2457
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2457

cagaccaagt accctgagtc tgacatttac tggaaaaaat ttgaagagaa atatcatttc 60

tcatgccaat ttactgctga tctttttgca atgaaccaca cagactttat catcaccagc 120

accttccaag agattgctgg aagcaaggac actgttggac agtatgagag tcacactgcc 180

ttcacccttc caggacttta ccgtgttgtt cacggtattg atccatttga tccaaa 236

<210> 2458
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2458

gggaattgtt cgcaaatgga tctcaagatt cgaagtctgg ccatacctag agacttacac 60

tgaggatgtc gcccttgaac ttgccaagga gttgcaagcc aagccagatc tgattgttgg 120

aaactacagt gatggaaaca ttgttgcctc tttgttagca cataaattag gagtaactca 180

gtgtaccatt gctcatgctc tagaaaagac caagtaccct gagtctgaca tttact 236

<210> 2459
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2459

cccacactga aaccagccgt aggttgacat ccttccaccc tgaaatcgaa gaactccttt 60

acagctcagt ggagaatgaa gaacacatat gtgtgctgaa ggaccgcagc aagccaatta 120

tcttcaccat ggcaaggttg gatcgagtga agaacatcac aggacttgtg gagtggtacg 180

gtaagaacgc gaactcgagg gctggtgaac cttgtggttg ttgctggaga caggaggaag 240

gagtcaaagg actt 254

<210> 2460
<211> 261
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (4),(42)...(45),(53)
<223> unsure at all n locations

<400> 2460

ccancaattc ccttctcagt tctaaaggga attgttcgtc annnngatct cangattcga 60

agtctggcca tacttggaaa cttacactga ggaacttgct catgagcttg ccaaagagtt 120

gcaaggcaag ccagatctga ttgtcggaaa ctacagtgat ggaaacattg ttgcctcttt 180

gttggcacat aaattaggag tcatcagtgt accattgctc atgcacttga gaagaccaaa 240

taccccgaat ccgacattta t 261

<210> 2461
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2461

catcaagaaa caaggccttg atatcacccc tcgtattctc attatcactc gtcttctccc 60

tgatggcagt aggaactacc tgtggccaac gtctagagag ggtatatgat actgaatatt 120

gtgacattct cagagttcct ttcagaacag aaaagggaat tgttcgcaaa tggatctcaa 180

gattcgaagt ctggccatac ctagagactt acactgagga tgtcgccctt gaacttgcca 240

aggagttgca agccaagcca gatctgattg ttggaaa 277

<210> 2462
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2462

ggctcgagcg gctcgagcga aactagccag aggttgacct ccttacaccc cgaaatcgaa 60

gaacttgttt acagctctgt ggagaatgaa gaacacatat gcgtgctgaa ggaccgcagc 120

aagccgatta tcttcaccat ggcaaggttg gaccgtgtga agaacatcac aggactcgtg 180

gagtggtacg gtaagaacgc gaagctgagg gagttggtga accttgtggt tgttgccgga 240

gacagga 247

<210> 2463
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2463

cggctcgagg tttatgaggc ctttgggttg actgtggttg aggccatgac ttgtgggttg 60

ccaacgtttg ccacatgcaa tggtggtcct gctgagatca ttgtgcatgg aaaatctggt 120

taccacattg atccttacca tggtgaccat gctgctgaga tccttgttga gttctttgag 180

aagagcaagg ctgatccatc tcactgggac aaaatctccc agggtggact caagcgtatt 240

catgagaagt 250

<210> 2464
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2464

cagactttat catcaccagc accttccaag agattgctgg aagcaaggac actgttggac 60

agtatgagag tcacactgcc ttcacccttc caggacttta ccgtgttgtt cacggtattg 120

atccatttga tccaaagttc aacattgtct ctcccggtgc agacatgggt atatacttcc 180

catacactga aactgagcgt aggttaacag aattccactc tgacattgaa tcgcttcttt 240

acagctcagt ggagaatgag gaacacat 268

<210> 2465
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2465

ttgccacatg caatggtggt cctgctgaga tcattgtgca tggaaaatct ggttaccaca 60

ttgatcctta ccatggtgac catgctgctg agatccttgt tgagttcttt gagaagagca 120

aggctgatcc atctcactgg gacaaaatct cccagggtgg actcaagcgt attcatgaga 180

agtacacatg gcaaatttac tcggacaggc tcttgacact cactggtgtg tatggcttct 240

ggaagcacgt gaccaatctt gaacgccgtg agagcaaacg tta 283

<210> 2466
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2466

gtttacatct tggatcaagt tcgtgccttg gagaatgaga tgctcaaccg catcaagaaa 60

caaggccttg atatcacccc tcgtattctc attatcactc gtcttctcca gcatgcagta 120

ggaactacct gtggccaacg tctagagagg gtatatgata ctgaatattg tgacattctc 180

agagttcctt tcataacaga aaagggaatt gttcgcaaat ggatctcaag attcgaagtc 240

tggccatacc tagagactta cactgagga 269

<210> 2467
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2467

caagaatgcg cgcctccgcg agttggtaaa cctcgtggtg gtggccggag acaggaggaa 60

ggagtccaag gacttggaag agaaggccga gatgaagaag atgtatggcc tcatcgagac 120

ctacaagttg acggccaatt cagatggatc tcctctcaga tgaaccgtgt gaggaacgga 180

gagctctacc gtgtcatctg tgacacaagg ggtgcctttg tgcagcctgc agtttatgag 240

gcctttgggt tga 253

<210> 2468
<211> 251
<212> nucleic acid
<213> Glycine max

<400> 2468

tatcacttct catgccaatt tactgctgat ctttttgcaa tgaaccacac agactttatc 60

atcaccagca ccttccaaga gattgctgga agcaaggaca ctgttggaca gtatgagagt 120

cacactgcct tcacccttcc aggactctac cgtgttgttc acggtattga tccctttgat 180

ccagagttca acatcgtctc tcccggtgcc gacatgagca tatacttccc atacactgaa 240

actgagcgta g 251

<210> 2469
<211> 258
<212> nucleic acid
<213> Glycine max

<400> 2469

cggctcgaga cggctgcgag aagcgacaga agggcgacat tgaagagctt ctttacagct 60

cagtggagaa tgaagaacac atatgtgtat tgaaggaccg caacaagccg atcatcttca 120

ccatggcaag acttgaccgt gtgaagaaca tcacgggact tgtggagtgg tatggcaaga 180

atgcgcgcct ccgcgagttg gtaaacctcg tggtggtggc cggagacagg aggaaggagt 240

ccaagggact tggaagag 258

<210> 2470
<211> 273
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (118)
<223>

<400> 2470

attgatccct ttgatccaaa gttcaacatc gtctctcccg gtgccgacat gagcatatac 60

ttcccataca ctgaaactga gcgtaggtta acagagttcc accccgacat tgaagcgnct 120

ctttacagct cagtggagaa tgaagaacac atatgtgtat tgaaggaccg caacaagccg 180

atcatcttca ccatggcaag acttgaccgt gtgaagaaca tcacgggact tgtggagtgg 240

tatggcaaga atgcgcgcct ccgcgagttg gta 273

<210> 2471
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2471

atgacttgtg ggttaccaac atttgccaca tgcaatggtg gtcctgctga gatcattgtg 60

catggaaaat ctggttacca cattgaccct taccatggtg accgtgctgc tgagatcctt 120

gttgagttct ttgaaaagag caaggctgac ccatctcact gggacaaaat ctcccagggt 180

gtactcaagc gtattcatga gaagtacaca tggcaaattt actctgacag gctcttgaca 240

ctcactggtg tgtatgg 257

<210> 2472
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2472

tggcaagaat gcgcgcctcc gcgagttggt aaacctcgtg gtggtggccg gagacaggag 60

gaaggagtcc aaggacttgg aagagaaggc cgagatgaag aagatgtatg gcctcatcga 120

gacctacaag ttgaacggcc aattcagatg gatctcctct cagatgaacc gtgtgaggaa 180

cggagagctc taccgtgtca tctgtgacac aaggggtgcc tttgtgcagc ctgcagttt 239

<210> 2473

<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2473

tgccaattta ctgctgatct ttttgcaatg aaccacacag actttatcat caccagcacc 60

ttccaagata ttgctggaag caaggacact gttggacagt atgagagtca cactgccttc 120

acccttccag gactctaccg tgttgttcac ggtattgatc cctttgatcc aaagttcaac 180

atcgtttctc gcggtgccga catgagcata tacttcccat acactgaaac tgttcgtagg 240

ttaacagagt tccacacaac ata 263

<210> 2474
<211> 230
<212> nucleic acid
<213> Glycine max

<400> 2474

ccgctcgagc ggctcgagca gtaccttcca ggagattgct ggaagcaagg acactgttgg 60

acagtatgag tctcacacag cctttacccc tcctggactc taccgtgttg tgcacggcat 120

tgatgtcttt gatccaaaat tcaacattgt ctcccctgga gctgatcaaa ccatttactt 180

cccccccacc gaaactagcc gtaggttgac ctccttccac cccgaaatcg 230

<210> 2475
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2475

aatttactgc tgatcttttt gcaatgaacc acacagactt tatcatcacc agcaccttcc 60

aagagattgc tggactcaag gacactgttg gacagtatga gagtcacact gccttcaccc 120

ttccaggact ttaccgtgtt gttcacggta ttgatccatt tgatccaaag ttcaacattg 180

tctctcccgg tgcagacatg ggtatatact tcccatacac tgaaactgag cgtaggttaa 240

cagaattcca ctctg 255

<210> 2476
<211> 276
<212> nucleic acid

<213>   Glycine max

<220>
<221>   unsure
<222>   (18),(33),(44),(66)...(67),(81)...(82),(99),(101),(140),
          (191),(203)...(204),(249)
<223>   unsure at all n locations

<400>   2476

ggagtatctg ggcacagngc ctcctgaaac tcnctactgc agantttgag cacaagttcc 60

aggagnntgg tttggagaga nngtggggtg acaacgcgna ntgtccttga gtcaattcaa 120

cttctcttgg atcttcttgn ggcccctgac ccgtgcaccc ttgagacttt ccttggaaga 180

atccctatgg ngttcaatgt tgnnatcttt ctccccatgg ttactttgcc caagataatg 240

tcttgggana cctgacactg gtggccaggt tgttac 276

<210>   2477
<211>   251
<212>   nucleic acid
<213>   Glycine max

<400>   2477

gtgacactgc cgagcgtgtc ctcgagatga tccagcttct cctggacctt cttgaggcac 60

ctgacccttg caccctcgag acattccttg gaagagtccc tatggtcttc aatgttgtta 120

tcctttctcc ccatggttac tttgcccaag ataatgtctt gggataccct gacactggtg 180

gacaggttgt ttacatcttg gatcaagttc gtgccttgga gaatgagatg ctcaaccgca 240

tcaagaaaca a 251

<210>   2478
<211>   270
<212>   nucleic acid
<213>   Glycine max

<400>   2478

cggtgcagac atgggtatat acttcccata cactgaaact gagcgtaggt taacagaatt 60

ccactctgac attgaagagc ttctttacag ctcagtggag aatgaggaac acatatgcgt 120

attgaaggac cgcaacaaac caataatctt caccatggca aggcttgacc gtgtgaagaa 180

catcacgggg attgtcgagt ggtacgggaa gaacgcacgc ctccgcgagt tggtgaacct 240

ggtggtggtg gctggagaca ggaggaagga 270

<210> 2479
<211> 174
<212> nucleic acid
<213> Glycine max

<400> 2479

gatcaaacca tttacttccc ccacactgaa accagccgta ggttgacatc cttccacccct 60

gaaatcgaag aactcccttta cagctcagtg gagaatgaag aacacatatg tgtgctgaag 120

gaccgcagca agccaattat cttcaccatg gcaaggttgg atcgagtgaa gaac 174

<210> 2480
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2480

ccatgctgct gagatccttg ttgagttctt tgagaagagc aaggctgatc catctcactg 60

ggacaaaatc tcccagggtg gactcaagcg tattcatgag aagtacacat ggcaaattta 120

ctcggacagg ctcttgacac tcactggtgt gtatggcttc tggaaacacg tgaccaatct 180

tgaacgccgt gagagcaaac gttacctcga gatgttctat gctctcaagt accgcaaat 239

<210> 2481
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2481

gaaccacaca gactttatca tcaccagcac cttccaagag attgctggaa gcaaggacac 60

tgttggacag tatgagagtc acactgcctt caccccttcca ggactctacc gtgttgttca 120

cggtattgat ccctttgatc caaagttcaa catcgtctct cccggtgccg acatgagcat 180

atacttccca tacactgaaa ctgagcgtag gttaacagag ttccaccccg acattga 237

<210> 2482
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2482

ggttaacaga gttccacccc gacattgaag ggcttcttta cagctcagtg gagaatgacg 60

aacacatatg tgtattgaag gaccgcaaca agccgatcat cttcaccatg gcaagacttg 120

accgtgtgaa gaacatcacg gcacttgtgg agtggtatgg caagaatgcg cgcctccgcg 180

agttggtaaa cctcgtcgtg gtggccggag acaggaggca ggagtccacg gacgtggaag 240

agaaggccga gatga 255

<210> 2483
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2483

gttctttgag aagagcaagg ctgatccatc tcactgggac aaaatctccc agggtggact 60

caagcgtatt catgagaagt acacatggca aatttactcg gacaggctct tgacactcac 120

tggtgtgtat ggcttctgga agcacgtgac caatcttgaa cgccgtgaga gcaaacgtta 180

cctcgagatg ttctatgctc tcaagtaccg caaattggct gagtctgtgc ccttgctatt 240

gaagagaaat tcatgtttga agag 264

<210> 2484
<211> 233
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (66)
<223>

<400> 2484

ctcgagccga atcggctcga gaacatcaca ggactcgtgg agtggcacgg taagaacgcg 60

acctgnaggg agttggtgaa ccttgtggtt gttgccggag acaggaggaa ggagtcgaag 120

gacttggaag agaaggccga gatgaagaag atgtacggcc tgatcgagac ctacaagttg 180

aacgggcaat tcagatggat ttcatctcag atgaaccgtg tgaggaacgg aga 233

<210> 2485
<211> 267

<212> nucleic acid
<213> Glycine max

<400> 2485

atgagatgct caaccgcatc aagaaacaag gccttgatat cacccctcgt attctcatta 60

tcactcgtct tctcgctgat gcagtaggaa ctacctgtgg ccaacgtcta gagagggtat 120

atgatactgg ctattggaca ttctcagagt tcctttcaga acagaaaagg gaattgttcg 180

caaatggatc tcaagattcg aagtctggcc atacctagag acttacactg aggatgtcgg 240

ccttgaactt gccaaggagt tgcaagc 267

<210> 2486
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 2486

ccgcaacaaa ccaataatct tcaccatggc aaggcttgac cgtgtgaaga acatcacggg 60

gcttgtcgag tggtacggga agcacgcacg cctccgcgag ttggtgaacc tggtggtggt 120

ggctggagac aggaggaagg agtcgaagga cttggaagag aaggccgaga tgaagaagat 180

gtatggcctc atcgagacct acaagttgaa cggccaattc agatggatat cctctcag 238

<210> 2487
<211> 259
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (22),(30)...(31),(44),(46),(94)
<223> unsure at all n locations

<400> 2487

gttaacagag ttccaccccg ancattgaan ncgttcttta cagntnagtg gagaatgaag 60

aacacatatg tgtattgaag gaccgcaaac aagncgatca tcttcaccat ggcaagactt 120

gaccgtgtga agaacatcac gggacttgtg gagtggtatg gcaagaatgc gcgcctccgc 180

gagttggtaa acctcgtggt ggtggccgga gacaggagga aggagtccaa ggacttggaa 240

gagaaggccg agatgaaga 259

<210> 2488
<211> 230
<212> nucleic acid
<213> Glycine max

<400> 2488

cctcgacgcc gagcgtgtcc tcgagatgat ccagcttctc ttggaccttc ttgaggcaac 60

cgaccctacc accctcgaga acttccttgg aagagttcct atggtcttca atgttgttat 120

cctttctccc catggttact ttgcccaaga taatgtcttg gggtaccctg acactggtgg 180

acaggttgtt tacatcttgg atcaagttcg tgccttggag aatgagatgc 230

<210> 2489
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2489

gttctttgaa aagagcaagg ctgacccatc tcactgggac aaaatctccc agggtggact 60

caagcgtatt catgagaagt acacatggca aatttactct gacaggctct tgacactcac 120

tggtgtgtat ggcttctgga agcatgtgac caatcttgaa cgccgtgaga gcaaacgtta 180

ccttgagatg ttctatgctc tcaagtaccg caaattggct gagtctgtg 229

<210> 2490
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2490

tattactcgt cttctccctg atgcagtagg aactacctgt ggccaacgtc tagagagggt 60

atatcatact gaatattgtg acattctccg agttcctttc agaaccgaaa acggaattgt 120

tcgcaaatgg atctcaacat tcgaagtctg gccataccta gagacttaca ctgaggatgt 180

tgcccttgaa cttgccaagg agttgcaagc caagccagat ctgatcgttg gaaactacag 240

tgatggaaac attgttg 257

<210> 2491
<211> 250
<212> nucleic acid

<213> Glycine max

<400> 2491

acagacttta tcatcaccag caccttccaa gagattgctg gaagcaagga cactgttgga 60

cagtatgaga gtcacactgc cttcaccctt ccaggacttt accctgttgt tcacggtatt 120

gatccatttg atccaaagtt caacattgtc tctcccggtg cagacatggg catatacctc 180

ccatacactg aaactgagcg taggttaaca gaattccact ctgacatcga agagcttctt 240

tacagctcag 250

<210> 2492
<211> 273
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (52),(91)
<223> unsure at all n locations

<400> 2492

gccaacgttt gccacatgca atggtggtcc tgctgagatc attgtgcatg gnaaatctgg 60

ttaccacatt gatccttaac atggtgacat nctgctgaga tccttgttga gttctttgag 120

aagagcaagg ctgatccatc ctcactggga caaaatctcc cagggtggac tcaagcgtat 180

tcatgagaag tacacatggc aaatttactc ggacaggctc ttgacactca ctggtgtgta 240

tggctctgga agcacgtgac caatctgaac gcc 273

<210> 2493
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2493

cggctcgagg tttatgaggc ctttgggttg actgtggttg aggccatgac ttgtgggttg 60

ccaacgtttg ccacatgcaa tggtggtcct gctgagatca ttgtgcatgg aaaatctggt 120

taccacattg atccttacca tggtgaccat gctgctgaga tccttgttga gttctttgag 180

aagagcaagg ctgatccatc tcactgggac aaaatctccc agggtggact caagcgtatt 240

catga 245

<210> 2494
<211> 252
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (23),(36)...(37),(235)
<223> unsure at all n locations

<400> 2494

taacaagttg aacggccaat acngatggat atcctnncag atgaaccgtg tgaggaacgg 60

agagctctac cgtgtcatct gtgacacaag ggtgcctttt gtgcagcctg cagtttatga 120

ggcctttggg ttgactgtgg ttgaggccat gacttgtggg ttgccaacgt ttgccacatg 180

caatggtggt cctgctgaga tcatgtgcag gaaaatctgg ttaccacatg atccntacca 240

ggtgaccagc tg 252

<210> 2495
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2495

acaggactcg tggagtggta cggtaagaac gcgaactcga gggagttggt gaaccttgtg 60

gttgttgccg gagacaggag gaaggagtcg aaggacttgg aagagaaggc cgagatgaag 120

aagatgtacg gcctgatcga gacctacaag ttgaacgggc aattcagatg gatttcatct 180

cagatgaacc gtgtgaggaa cggagagctg taccgtgtga tctgcgacac caagggagct 240

ttcgtgcagc cggctatata c 261

<210> 2496
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2496

caaagttcaa cattgtctct cccggtgcag acatgggcat atacttccca tacactgaaa 60

ctgagcgtag gttaacagaa ttccactctg acatcgaaac acttctttac agctcagtgg 120

agaatgagga acacatatgc gtatgaagga ccgcaacaaa ccaataatct tcaccatggc 180

aaggcttgac cgtgtgaaga acatcacggg gcttgtcgag tggtacggga agaacgcacg 240

cctccg 246

<210> 2497
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2497

caggacttta ccgtgttgtt cacggtattg atccatttga tccaaagttc aacattgtct 60

ctcccggtgc agacatgggt atatacttcc catacactga aactgagcgt aggttaacag 120

aattccactc tgacattgaa gggcttcttt acagctcagt ggagaatgag gaacacatat 180

gcgtattgaa ggaccgcaac aaaccactaa tcttcaccat ggcaaggctt gaccgatgtg 240

aagaacatca cggggcttgt c 261

<210> 2498
<211> 219
<212> nucleic acid
<213> Glycine max

<400> 2498

gagatctaca agttgtacgg ccaattcaga tggatatcct ctcagatgaa ccgtgtgagg 60

aacggagagc tctaccgtgt catctgtgac acaaggggtg cctttgtgca gcctgcagtt 120

tatgaggcct ttaggttgac tttgggtaag gccatgactt gtgggtcgcc aacgtttgcc 180

acatgcaatg gtggtcctgc tgagatcatt gtgcatgga 219

<210> 2499
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2499

caaggcttga ccgtgtgaag aacatcacgg ggcttgtcga gtggtacggg aagaacgcac 60

gcctccgcga gttggtgaac ctggtggtgg tggctggaga caggaggaag gagtcgaagg 120

acttgaagag aaggccgaga tgaagaagat gtatggcctc atcgagacct acaagttgaa 180

cggccaattc agatggatat cctctcagat gaaccgtgtg aggaacggag agctc 235

<210> 2500
<211> 238
<212> nucleic acid
<213> Glycine max

<400> 2500

acaaaatctc ccagggtgga ctcaagcgta ttcatgagaa gtacacatgg caaatttact 60

cggacaggct cttgacactc actggtgtgt atggcttctg gaagcacgtg accaatcttg 120

aacgccgtga gagcaaacgt tacctcgaga tgttctatgc tctcaagtac cgcaaattgg 180

ctgagtctgt gccccttgct attgaagagt aaattcatgt ttgaagagaa catcaatg 238

<210> 2501
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (202),(217)
<223> unsure at all n locations

<400> 2501

ctgaaactga gcgtaggtta acagaattcc actctgacat cgaagcgctt ctttacagct 60

cagtggagaa tgaggaacac atatgcgtat tgaaggaccg caacaaacca ataatcttca 120

ccatggcaag gcttgaccgt gtgaagaaca tcacggggct tgtcgagtgg tacgggaaga 180

acgcacgcct tcgcgagatt gntaaccatg ctgatgntgc atgagacagg aggaaggaga 240

ctgaagactt tgaagagaag gccg 264

<210> 2502
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2502

ctgaaactga gcgtaggtta acagaattcc actctgacat cgaaacaatt ctttacagct 60

cagtggagaa tgaggaacac atatgcgtat tgaaggaccg caacaaacca atatcttcac 120

catggcaagg cttgaccgtg tgaagaacat cacggggctt gtcgagtggt acgggaagaa 180

cgcacgcctc cgcgagttgg tgaacctggt ggtggtggct ggagacagga ggaaggagtc 240

gaaggacttg gaagaga 257

<210> 2503
<211> 175
<212> nucleic acid
<213> Glycine max

<400> 2503

caacttctct tggatcttct tgaggcccct gacccttgca cccttgagac tttccttgga 60

agaattccta tggtcttcaa tgttgtcatt ctttctcccc atggttactt tgcccaagat 120

tatgtcttgg gataccctga cactggtggc caggttgttt acatcttgga tcaag 175

<210> 2504
<211> 189
<212> nucleic acid
<213> Glycine max

<400> 2504

gggaattgtt cgcaaatgga tctcaagatt cgaagtctgg ccatacctag agacttacac 60

tgaggatgtc gccctggaac ttgccaagga gttgcaagcc aagctagatc tgattgttgg 120

aaactacagt gatggaaaca ttgttgcctc tttgttagca cataaattag gagtaactca 180

gtgtacaat 189

<210> 2505
<211> 216
<212> nucleic acid
<213> Glycine max

<400> 2505

gacatcgaag agcttcttta cagctcagtg gagaatgagg aacacatatg cgtattgaag 60

gaccgcaaca aaccaataat cttcaccatg gcaaggttga ccgtgtgaag aacatcacgg 120

ggcttgtcga gtggtacggg aagaaacgaa ggcttcgcga gttggtgaac tggtggtggt 180

ggctgaagac aggaggaagg attcgaggct ttgaaa 216

<210> 2506
<211> 246

<212> nucleic acid
<213> Glycine max

<400> 2506

ctcgagccga atcggctcga gcggctcgag cggctcgaga tgaagcacac atatgtgtat 60

tgaaggaccg caacaagccg aacatcttca acatggcaag acttgaccgt gtgaagaaca 120

tcacgggact tgtggagtgg tatggcaaga atgcgcgcct ccgcgagttg gtaaacctcg 180

tggtggtgga cggagacagg aggaaggagt ccaaggacgt tgaagagaag gccgagatga 240

agaaga 246

<210> 2507
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2507

tgaagaagat gtacggcctg atcgagacct acaagttgaa cggccaattc agatggattt 60

catcgcagat gaaccgtgtg aggaatggag agctctaccg cgtgatctgc gacaccaggg 120

gtgctttcgt gcagcctgct gtatacgagg cttttggttt gacagtggtt gaggccatga 180

cttgcggctt gccaacattc gccacatgca atggtggtcc tgctgagatc attgtgcac 239

<210> 2508
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2508

gggtggactc aagcgtattc atgagaagta cacatggcaa atttactcgg acaggctctt 60

gacactcact ggtgtgtatg gcttctggaa gcacgtgacc aatcttgaac gccgtgagat 120

gaaacgttac ctcgagatgt tctatgctct caagtaccgc aaattggctg agtctgtgcc 180

ccttgctatt gacgagtaaa ttcatgtttg aagagaacat caatggcgaa accggctttt 240

ggtcgtttga agtcttatgg agctttcat 269

<210> 2509
<211> 184
<212> nucleic acid
<213> Glycine max

<400> 2509

aactcagtgt accattgctc atgctctaga aaagaccaag taccctgagt ctgacattta 60

ctggaaaaaa tttgaagaga aatatcattt ctcatgccaa tttactgctg atctttttgc 120

aatgaaccac acagacttta tcatcaccag caccttccaa gagattgctg gaagcaagga 180

cact 184

<210> 2510
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2510

ggatcaagtt cgtgccttgg agaatgagat gctcaaccgc atcaagaaac aaggccttga 60

tatcacccct cgtattctca ttattactcg tcttctccct gatgcagtag gaactacctg 120

tggcgaacgt ctagagaggg tatatgatac tgaatattgt tacattctcc gcggtcctgt 180

cagaactgag gagggacttg ttcgcaaatg gagctgaaga ttcgaagtc 229

<210> 2511
<211> 215
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (51),(149)
<223> unsure at all n locations

<400> 2511

atcaccagca ccttccaaga gattgctgga agcaaggaca ctgttggaca ntatgagagt 60

cacactgcct tcacccttcc aggactttac cgtgttgttc acggtattga tccatttgat 120

ccaaagttca acattgtctc tcccggtgnc gacatgggta tatacttccc atacactgaa 180

actgagcgta ggttaacaga attccacaca acata 215

<210> 2512
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2512

atttgatcca aagttcaaca ttgtctctcc cggtgcagac atgggtatat acttcccata 60

cactgaaact gagcgtaggt taacagaatt ccactctgac attgacgaag ctctttacag 120

ctcagtggag aatgaggaac acatatgcgt attgaaggac cgcaacaaac caataatctt 180

caccatggca aggcttgacc gtgtgaagaa catcacgggg cttgtcgagt ggtac 235

<210> 2513
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2513

tctcgagcga ttcggatcac ggctcgaggt tcacggtatt gacccatttg atccaaagct 60

caacattgtc tctcccggtg cagacatggg tatatacttc ccatacactg aaactgagcg 120

taggttaaca gaattccact ctgacattga agagcttctt tacagctcag tggagaatga 180

ggaacacata tgcgtattga aggaccgcaa caaaccaata atcttcacca tggcaaggct 240

tgaccgtgtg aag 253

<210> 2514
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2514

cggtgcagac atgggtatat acttcccata cactgaaact gagcgtaggt taacagaatt 60

ccactctgac attgaaacac ctctttacag ctcagtggag aatgaggaac acatatgcgt 120

attgaaggac cgaacaaacc aataatcttc accatggcaa ggcttgacgc tggtgaagaa 180

ctccacgggg cttgtcgagt ggtacgggaa gaacgcacgc ctccgcgagt tggtgaacct 240

ggtggtggtg 250

<210> 2515
<211> 269
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure

<222> (59),(70),(80),(105),(109),(113)...(114),(119),(160),
(166),(195),(226),(237),(258),(260),(268)
<223> unsure at all n locations

<400> 2515

tcgactggta cgggaagaac gcacgcctcc gcgagttggt gaacctggtg gtggtggcng 60

gagacaggan gaaggagtcn aaggacttgg aagagaaggc cgagntgang aanntgtang 120

gctcatcgag acctacaagt tgaacggcca attcagatgn atatcntctg cagatgaacc 180

gtgtgaggaa cgganagctc taccgtgtcc atctgtgaca caaggngtgc tttgtgncag 240

cctgcagttt atgaggcntn gggttganc 269

<210> 2516
<211> 227
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (46)
<223>

<400> 2516

cagactttat catcaccagc accttccaag agattgctgg aataanggac actgttggac 60

agtatgagag tcacactgcc ttcacccttc caggacttta ccgtgttgtt cacggtattg 120

atgcctttga tccaaagttc aacattgtct ctcccggtgc agacatgggt atatacttcc 180

catacactga aactgagcgt aggttaacag aattccacac tgcatac 227

<210> 2517
<211> 244
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (218)
<223>

<400> 2517

gtatatactt cccatacact gaaactgagc gtaggttaac agaattccac tctgacattg 60

aatctcttct ttacagctca gtggagaatg aggaacacat atgcgtattg aaggaccgca 120

acaaaccata atcttcacca tggcaatgct tgacgtgttg aagaacatca cggggcttgt 180

cgagtggtac gggaagaacg cacgcctccg cgagttgngt gaactggtgg tggtggctgg 240

agac 244

<210> 2518
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2518

ccggtgcaga catgggcata tacttcccat acactgaaac tgagcgtagg ttaacagaat 60

tccactctga catcgaacta cttctttaca gctcagtgga gaatgaggaa cacatatgcg 120

tattgaagga ccgcaacaaa ccaataatct tcaccatggc aaggcttgac cgttgtgaag 180

aacatcacgg ggcttgtcga gtggtacggg aagaacgcac gcctccgcga gttggtgaac 240

ctggtggtgg tagctggaga 260

<210> 2519
<211> 177
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (129),(159),(165),(167)...(168),(170),(176)
<223> unsure at all n locations

<400> 2519

tctaccgtgt catctgtgac acaaggggtg cctttgtgca gcctgcagtt tatgaggcct 60

ttgggttgac tgtggttgag gccatgactt gtgggttacc aacatttgcc acatgcaatg 120

gtggtcctnc tgagatcatt gtgcatggaa aatctggtna ccacntnncn cccttnt 177

<210> 2520
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2520

atagagaggg tatactgata ctgaatattg tgacattctc agagttcctt tcagaacaga 60

aaagggaatt gttcgcaaat ggatctcaag attcgaagtc tggccatacc tagagactta 120

cactgaggat gtcgcccttg aacttgtcaa ggagttgaag ccaagtcaga tctgattgtt 180

ggaaactaca gtgatggaaa cattgttgcc tctttgttag cacataaatt aggagtcact 240

cagt 244

<210> 2521
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2521

gtaaatgtcg gattcggggt atttggtctt ctcaagtgca tgagcaatgg tacactgagt 60

gactcctaat ttatgtgcca acaaagaggc aacaatgttt ccatcactgt agtttccgac 120

aatcagatct cattatcacc agtaccttcc aggagattgc tggaagcaag gacactgttg 180

gacagtatga ctctcacaca gcctttaccc ttcctggact ctaccgtgtt gtgcacggca 240

ttgatgtctt tgatccaaa 259

<210> 2522
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2522

cggacaggct cttgacactc actggtgtgt atggcttctg gaagcacgtg accaatcttg 60

aacgccgtga gagcaaacgt tacctcgaga tgttctatgc tctcaagtac cgcaaattgg 120

ctgagtctgt gccccttgct attgaagagt aaattcatgt ttgaagagaa catcaatgga 180

gaaaccggct tttggtcgtt tgaagtctta tggagctttc ataaataacg ccattgatt 239

<210> 2523
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2523

cggacaggct cttgacactc actggtgtgt atggcttctg gaagcacgtg accaatcttg 60

aacgccgtga gagcaaacgt tacctcgaga tgttctatgc tctcaagtac cgcaaattgg 120

ctgagtctgt gccccttgct attgaagagt aaattcatgt ttgaagagaa catcaatgga 180

gaaaccggct tttggtcgtt tgaagtctta tggagctttc ataaataacg ccatt 235

<210> 2524
<211> 143
<212> nucleic acid
<213> Glycine max

<400> 2524

ctcgagccgc accagtacct tccaggagat tgctggaagc aaggacactg ttggacagta 60

tgcgtctcac acagccttta cccttcctgg actctaccgt gttgtgcacg gcattgatgt 120

ctttgatcca aaattccaca ttg 143

<210> 2525
<211> 142
<212> nucleic acid
<213> Glycine max

<400> 2525

gtcggaaact acagtgatgg aaacattgtt gcctctttgt tggcacataa attaggagtc 60

actcagtgta ccattgctca tgcacttgag aagagcgaat accccgaatc cgacatgtac 120

tggacaagat tgggagagag gt 142

<210> 2526
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2526

ctcactggtg tgtatggctt ctggaagcac gtgaccaatc ttgaacgccg tgagagcaaa 60

cgttacctcg agatgttcta tgctctcaag taccgcaaat tggctgagtc tgtgcccctt 120

gctattgaag agtaaattca tgtttgaaga gaacatcaat ggagaaaccg gcttttggtc 180

gtttgaagtc ttatggagct ttcataaata acgccattga ttttgattgt gatcagcttt 240

tggatttaaa gagt 254

<210> 2527
<211> 131
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (19),(28),(46),(64)...(66),(85),(87),(89),(94),(106),
(118)...(121)
<223> unsure at all n locations

<400> 2527

cttgtggttg ttgccggana caggagtnag gagtcgaagg acttgnaaga gaaggccgag 60

atgnnnaaga tgtacggcct gatcnananc tacnagttga acgggnaatt cagatggnnn 120

ncatctcaga t 131

<210> 2528
<211> 161
<212> nucleic acid
<213> Glycine max

<400> 2528

tatgagagtc acactgcctt caccccttcca ggactctacc gtgttgttca cggtattgat 60

ccctttgatc caaagttcaa catcgtctct cccggtgccg acatgagcat atacttccca 120

tacactgaaa ctgaacgtag gttaacagag ttccacacaa c 161

<210> 2529
<211> 152
<212> nucleic acid
<213> Glycine max

<400> 2529

ctggactcta ccgcgttgtg catggtattg atgtctttga tccaaaattc aacattgtct 60

cccctggagc tgatcaaacc atttacttcc cccacactga aaccagccgt aggttgacat 120

ccttccaccc tgaaatcgaa gaactccttt ac 152

<210> 2530
<211> 232
<212> nucleic acid
<213> Glycine max

<400> 2530

ctgaaactga gcgtagggta acagaattcc actctgagat cgaagcgctt ctttacagct 60

cagtggagaa tgaggaacac atatgcgtat tgaaggaccg gaacaaacga atatcttcac 120

catggcaagg cttgaccgtg tgaagaacat cacggggctt gtcgagtggt acgggaagaa 180

cgcaagcctc cgcgagttgg tgaacctggt ggtggtggct ggagacagga gg 232

<210> 2531
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2531

ttcgacacgc acggccaggc tcttgacact caccggtgtg tatggcacct ggaagcccgt 60

gaccaatcgc gaacgccgtg agagcaaacg ctacgccgag atgttccaag ctactcaagt 120

accgcaaatt ggctgagtct gtgccccttg ctactgaaga gtaacttcat gtttgaagag 180

aacatcaatg gagacaccgg cttttggtcg tttgaagtct tatggagctt tcataaataa 240

cgcc 244

<210> 2532
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2532

attcttgagt tcatggaagg gaaaccagat cttgttattg gaaattacac tgatggaaat 60

ttggtagcat cactaatggc tagaaaactt gggataactc agggaactat agcacatgct 120

ttagagaaga ccaagtatga agactcagat gtcaagtgga aagagttgga ccccaagtac 180

cacttctcgt gtcaattcat ggcggataca gtggcaatga atgcatctga tttcatcata 240

accagcacat accacgaatg tcgtggaagc aaagataga 279

<210> 2533
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2533

gttcatggaa gggaaaccag atctagttat tggaaattac actgatggaa atttggtagc 60

atcactaatg gctagaaaac ttgggataac tcagggaact atagcacatg ctttagagaa 120

gaccaagtat gaagactcag atgtcaagtg gaaagagttg gaccccaagt accacttctc 180

gtgtcaattc atggcggata cagtggcaat gaatgcatct gatttcatca taaccagcac 240

atac 244

<210> 2534
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2534

gccgtgagag ccgccgctat ctcgagatgt tctatgctct caagtaccgc aaattggctg 60

agtctgtgcc ccttgctgct gagtaaactg aggataaaga gttggataaa gaaatggagg 120

aaccggcttt ttctttctca tttggagttt gtcgcacttg agttttataa ataatgtccg 180

tgattttagt tttgtgatta agctttcgat aagaggagag aaagagaagg aaaaaaaagt 240

tgcttttttt tttggtggtt gc 262

<210> 2535
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2535

tcgagatgtt ctatgctctc aagtaccgca aattggctga gtctgtgccc cttgctgctg 60

agtaaactga ggataaagag ttggataaag aaatggagga accggctttt tctttctcat 120

ttggagtttg tcgcacttga gttttataaa taatgtccgt gattttagtt ttgtgattaa 180

gctttcgata agaggagaga aagagaagga aaaaaaagt tgcttttttt tttgttgttg 240

catgattggg acttgattgg aaaagc 266

<210> 2536
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2536

gttggataaa gaaatggagg aaccggcttt ttctttctca tttggagttt gtcgcacttg 60

agttttataa ataatgtccg tgattttagt tttgtgatta agctttcgat aagaggagag 120

aaagagaagg aaaaaaaaag ttgctttttt ttttgttgtt gcatgatttg gatcttgatt 180

ggaaaagctt cgaattgggg tagttttacc cagcaattca attttaagcc gtgccttctt 240

c 241

<210> 2537
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2537

ctctcaagta ccgcaaattg gctgagtctg tgccccttgc tgctgagtaa actgaggata 60

aagagttgga taaagaaatg gaggaaccgg ctttttcttt ctcatttgga gtttgtcgca 120

cttgagtttt ataaataatg tccgtgattt tagttttgtg attaagcttt cgataagagg 180

agagaaagag aaggaaaaaa aaagttgctt ttttttttgt tgttgcatga tttggatctt 240

gattggaaaa gcttcgaatt ggggtagttt tacc 274

<210> 2538
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2538

atttttacct tgaaatatgt tgtcattgaa cttgctaatg tatcttgtta ttgtttttac 60

ctttaggctg agtctgtgcc ccttgctgct gagtaaactg aggataaaga gttggataaa 120

gaaatggagg aaccggcttt ttctttctca tttggagttt gtcgcacttg agttttataa 180

ataatgtccg tgattttagt tttgtgatta agctttcgat aagaggagag aaagagaagg 240

aaaaaaaaag ttgcttttgt tttgttgtt gcatg 275

<210> 2539
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2539

gccgtgagag ccgccgctat ctcgagatgt tctatgctct caagtaccgc aaattggccg 60

agtctgtgcc ccttgctgtt gagtaaactg aggatgaaga gttggataaa gaaatggagg 120

aaccggcttt ttgtttctca tttggagttt gtcttacttg agttctataa ataatatgtc 180

cctgatgatt ttaattttgt gattaagctt tcgataagag acagagagag aaaaaaaaaa 240

aaaaaaaaag gggggg 256

<210> 2540
<211> 259
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2)
<223>

<400> 2540

cntgtgtcta accttgaccg ccgtgagagc cgccgctatc tcgagatgtt ctatgctctc 60

aagtaccgca aattggccga gtctgtgccc cttgctgttg agtaaactga ggatgaagag 120

ttggataaag aaatggagga accggctttt tgtttctcat ttggagtttg tcttacttga 180

gttctataaa taatatgtcc ctgatgattt taattttgtg attaagcttt cgataagaga 240

cagagagaga aaaaaaagg 259

<210> 2541
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2541

gccgctatct cgagatgttc tatgctctca agtaccgcaa attggccgag tctgtgcccc 60

ttgctgttga gtaaactgag gatgaagagt tggataaaga aatggaggaa ccggcttttt 120

gtttctcatt tggagtttgt cttacttgag ttctataaat aatatgtccc tgatgatttt 180

aattttgtga ttaagctttc gataagagac agagagagaa aaaaaaggaa aaaaaaaaaa 240

aagcctttta 250

<210> 2542
<211> 189
<212> nucleic acid
<213> Glycine max

<400> 2542

gtgagagccg ccgctatctc gagatgttct atgctctcaa gtaccgcaaa ttggccgagt 60

ctgtgcccct tgctgttgag taaactgagg atgaagagtt ggataaagaa atggaggaac 120

cggcttttg tttctcattt ggagtttgtc ttacttgagt tctataaata atatgtccct 180

gatgatttt 189

<210> 2543
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2543

gccgtgagag ccgccgctat ctcgagatgt tctatgctct caagtaccgc aaattggccg 60

agtctgtgcc ccttgctgtt gagtaaactg aggatgaaga gttggataaa gaaatggagg 120

aaccggcttt ttgttctcat ttggagtttg tcttacttga gttctataaa taatatgtcc 180

ctgatgattt taattttgtg attaagcttt cgataagaga cagagagag 229

<210> 2544
<211> 223
<212> nucleic acid
<213> Glycine max

<400> 2544

ctttaggccg agtctgtgcc ccttgctgtt gagtaaactg aggatgaaga gttggataaa 60

gaaatggagg aaccggcttt ttgtttctca tttggagttt gtcttacttg agttctataa 120

ataatatgtc cctgatgatt ttaattttgt gattaagctt tcgataagag acagagagag 180

aaaaaaaagg aaaaaaaaaa aagcctttta ctttttgtct ttt 223

<210> 2545
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2545

ctcgagccgc aagacctggt gtgtgggagt acctgagagt gaatgtgcac gctcttgttg 60

ttgaggagtt gcaacctgct gagtacctgc acttcaagga agaacttgtt gacggaagtt 120

ctaatggcaa ctttgtgctt gagttggact ttgaaccatt caatgcagcc ttcccccgcc 180

caactcttaa caaggcaatt ggaaatggtg tgcaagacct caaccgtcac ctttctgcca 240

aactcttcca cgacaaggtg agcagacacc cacttttgga gt 282

<210> 2546
<211> 271
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (113),(116)...(118),(191),(206)
<223> unsure at all n locations

<400> 2546

gttgcaacct gctgagtacc ttcacttcaa ggaagaactt gttgatggaa gttctaatgg 60

caactttgtg cttgagttgg actttgaacc attcaatgca gccttccctc gcncannncc 120

ttaacaagtc aattggaaat ggtgtgcagt tcctcaaccg ccacctttct gccaaactct 180

tccacgaaaa ngaaaaatgg aaaaanactt ttggaattcc tcaggcttca cagcgtcaag 240

ggaaagactt tgatgttgaa tgacagaatc a 271

<210> 2547
<211> 214
<212> nucleic acid
<213> Glycine max

<400> 2547

tgtgcacgct cttgttgttg aggagttgca acctgctgag tacctgcact tcaaggaaga 60

acttgttgac ggaagttcta atggcaactt tgtgcttgag ttggactttg aaccattcaa 120

tgcagccttc ccccgcccaa ctcttaacaa gtcaattgga aatggtgtgc aattcctcaa 180

ccgtcacctt tctgccaaac tcttccacac aaca 214

<210> 2548
<211> 87
<212> nucleic acid
<213> Glycine max

<400> 2548

tggactttga accattcaat gcagccttcc ctcgcccaac tcttaacaag tcaattggaa 60

atggtgtgca gttcctcaac cgccacc 87

<210> 2549
<211> 333
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (87)...(88)
<223> unsure at all n locations

<400> 2549

ctttacaccc ccctctctat tttgcgttca ttctgttttc ttgaagtctt tccctagcca 60

atggccactg atcgtttgac ccgggtnnca cagtctccgt gagaggcttg atgaaacccct 120

cactgccaac gggaacgaaa ttttggccct tctgtcaagg atcgagctaa gggcaagggg 180

atcctgcaac accaccaggt cattgctgag tttgaggaaa tccctgagga gaacaggcag 240

aagcttactg atggtgcctt tggagaagtc ttgagatcta cacaggaagc catagttttg 300

ccaccatggg ttgctctggc tgttcgtcca agc 333

<210> 2550
<211> 291
<212> nucleic acid
<213> Glycine max

<400> 2550

ccccctctct tttttgcgtt cattctgttt tcctgatgaa gtctttccct agccaatggc 60

caccgatcgt ttgacccggg ttcacagtct ccgtgagagg cttgatgaaa ccctcactgc 120

caacaggaat gaaattttgg cccttctgtc aaggatcgaa gccaagggca agggcatcct 180

gcaacaccac caggtcattg ctgagtttga ggaaatccct gaggagaaca gacagaagct 240

cactgatggt gcctttggag aagtcttgag atctacacag gaagccatag t 291

<210> 2551
<211> 298
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (31),(59),(63)...(64),(73)
<223> unsure at all n locations

<400> 2551

cgttcattct gttttcagtt gaagtctttc nctagccaat ggccactgat cgtttgacnc 60

gtnntcacag tcnccgtgag aggcttgatg aaaccctcac tgccaacagg aacgaaattt 120

tggcccttct gtcaaggatc gaagctaagg gcaaggggat cctgcaacac caccaggtca 180

ttgctgagtt tgaggaaatc cctgaggaga acaggcagaa gcttactgat ggtgcctttg 240

gagaagtctt gagatctaca caggaagcca tagttttgcc accatgggtt gctctggc 298

<210> 2552
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2552

ttttcctgtt gaagtctttc cctagccaat ggccaccgat cgtttgaccc gggttcacag 60

tctccgtgag aggcttgatg aaaccctcac tgccaacagg aatgaaattt tggcccttct 120

gtcaaggatc gaagccaagg gcaagggcat cctgcaacac caccaggtca ttgctgagtt 180

tgaggaaatc cctgaggaga acagacagaa gctcactgat ggtgcctttg gagaagtctt 240

gagatctaca caggaagcca ta 262

<210> 2553
<211> 291
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (168)
<223>

<400> 2553

cccctctcta ttttgcgttc attctgtttt ccagttgaag tctttcccta gccaatggcc 60

actgatcgtt tgacccgggt tcacagtctc cgtgagaggc ttgatgaaac cctcactgcc 120

aacaggaacg aaattttggc ccttctgtca aggatcgaag ctaagtanca aggggatcct 180

gcaacaccac caggtcattg ctgagtttga ggaaatccct gaggagaaca ggcagaagct 240

tactgatggt gcctttggag aagtcttgag atctacacag gaagccatag t 291

<210> 2554
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2554

ctcactgcca acaggaatga aattttggcc cttctgtcaa ggatcgaagc caagggcaag 60

ggcatcctgc aacaccacca ggtcattgct gagtttgagg aaatccctga ggagaacaga 120

cagaagctca ctgatggtgc ctttggagaa gtcttgagat ctacacagga agccatagtt 180

ttgccaccat gggttgctct ggctgttcgt ccaagacctg gtgtgtggga gtacctgaga 240

gtgaatg 247

<210> 2555
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2555

tctttatacc ccccctctct tttttgcgtt cattctgttt tcctgttgaa gtctttccct 60

agccaatggc caccgatcgt ttgacccggg ttcacagtct ccgtgagagg cttgatgaaa 120

ccctcactgc caacaggaat gaaattttgg cacttctgtc aaggatcgaa gccaagggca 180

agggcatcct gcaacaccac caggtcattg ctgagtttga ggaaatccct gaggagaaca 240

gacagaagct cactgatggt gcctttgg 268

<210> 2556
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2556

tctctttata cccccccctct ctttttttgcg ttcattctgt tttcctgttg aagtctttcc 60

ctagccaatg gccaccgatc gtttgacccg ggttcacagt ctccgtgaga ggcttgatga 120

aaccctcact gccaacagga atgaaatttt ggcccttctg tcaaggatcg aagccaaggg 180

caagggcatc ctgcaacacc accaggtcat tgctgagttt gaggaaatcc ctgaggagaa 240

cagacagaag ctcactgatg 260

<210> 2557
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2557

cccccctctc tttttgcgt tcattctgtt ttcctgttga agtctttccc tagccaatgg 60

ccaccgatcg tttgacccgg gttcacagtc tccgtgagag gctggatgaa accctcactg 120

ccaacaggaa tgaaattttg gcccttctgt caaggatcga agccaagggc aagggcatcc 180

tgcaacacca ccaggtcatt gctgagtttg aggaaatccc tgaggagaac agacagaagc 240

tcactgatgg tgcctttgga g 261

<210> 2558
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2558

ctttataccc cccctctctt ttttgcgttc attctgtttt cctgatgaag tctttcccta 60

gccaatggcc accgatcgtt tgacccgggt tcacagtctc cgtgagaggc ttgatgaaac 120

cctcactgcc aacaggaatg aaattttggc ccttctgtca aggatcgaag ccaagggcaa 180

gggcatcctg caacaccacc aggtcattgc tgagtttgag gaaatccctg aggagaacag 240

acagaagctc actg 254

<210> 2559
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2559

gcgttcattc tgttttcctg ttgaagtctt tccgtagcca atggccaccg atcgtttgac 60

ccgggttcac agtctccgtg agaggcttga tgaaaccctc actgccaaca ggaatgaaat 120

tttggccctt ctgtcaagga tcgaagccaa gggcaagggc atcctgcaac accaccaggt 180

cattgctgag tttgaggaaa tccctgagga gaacagacag aagctcactg atggtgcctt 240

tgg 243

<210> 2560
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2560

ctttacaccc ccctctctat tttgcgttca ttctgttttc cagttgaagt ctttccctag 60

ccaatggcca ctgatcgttt gacccgggtt cacagtctcc gtgagaggct tgatgaaacc 120

ctcactgcca acaggaacga aattttggcc cttctgtcaa ggatcgaagc taagggcaag 180

gggatcctgc aacaccacca ggtcattgct gagtttgagg aaatccctga ggagaacagg 240

cagaagctta ctgatggtgc ctttggagaa g 271

<210> 2561
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2561

ctctattttg cgttcattct gttttccagt tgaagtcttt ccatagccaa tggccactga 60

tcgtttgacc cgggttcaca gtctccgtga gaggcttgat gaaaccctca ctgccaacag 120

gaacgaaatt ttggcccttc tgtcaaggat cgaagctaag ggcaagggga tcctgcaaca 180

ccagcaggtc attgctgagt ttgaggaaat ccctgaggag aacaggcaga agcttactga 240

tggtgccttt ggaga 255

<210> 2562
<211> 233
<212> nucleic acid
<213> Glycine max

<400> 2562

ttttgcgttc attctgtttt cctgttgaag tctttcccta gccaatggcc accgatcgtt 60

tgacccgggt tcacagtctc cgtgagaggc ttgatgaaac cctcactgcc aacaggaatg 120

aaattttggc ccttctgtca aggatcgaag ccaagggcaa gggcatcctg caacaccacc 180

aggtcattgc tgagtttgag gaaatccctg aggagaacag acagaagctc act 233

<210> 2563

<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2563

gttcattctg ttttcttgaa gtctttccct agccaatggc cactgatcgt ttgacccggg 60

ttcacagtct ccgtgagagg cttgatgaaa ccctcactgc caacaggaac gaaattttgg 120

cccttctgtc aaggtcgaag ctaagggcaa ggggatcctg caacaccacc aggtcattgc 180

tgagtttgag gaaatccctg aggagaacag gcagaagctt actgatggtg cctttggaga 240

agtcttgaga tctacacagg aa 262

<210> 2564
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2564

gcgttcattc tgttttcctg ttgaagtctt tccctagcca atggccatcg atcgtttgac 60

ccgggttcac agtctccgtg agaggcttga tgaaaccctc actgccaaca ggaatgaaat 120

tttggccctt ctgtcaagga tcgaagccaa gggcaagggc atcctgcaac accaccaggt 180

cattgctgag tttgaggaaa tccctgagga gaacagacag aagctcactg atggtgc 237

<210> 2565
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2565

ctttacaccc ccctctctat tttgcgttca ttctgttttc cagttgaagt ctttccctag 60

ccaatggcca ctgatcgttt gacccgggtt cacagtctcc gtgagaggct tgatgaaacc 120

ctcactgcca acaggacgaa attttggccc ttctgtcaag gatcgaagct aagggcaagg 180

ggatcctgca acaccaccag gtcattgctg agtttgagga aatccctgag gagaacaggc 240

agaagcttac tgatggtgcc tttggaga 268

<210> 2566
<211> 268
<212> nucleic acid

<213> Glycine max

<220>
<221> unsure
<222> (21),(228),(256),(264),(266)
<223> unsure at all n locations

<400> 2566

cttctcttta cacccccctc ncctattttg cgttcattct gttttccagt tgaagtcttt 60

ccctagccaa tggccactga tcgtttgacc cgggttcaca gtctccgtga gaggcttgat 120

gaaaccctca ctgccaacag gaacgaaatt ttggcccttc tgtcaaggat cgaagctaag 180

ggcaagggga tcctgcaaca ccaccaggtc attgctgagt ttgagganat ccctgaggag 240

aacaggcaga agcttnctga tggngnct 268

<210> 2567
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2567

cgttcattct gttttcctgt tgaagtcttt ccctagccaa tggccaccga tcgtttgacc 60

cgggttcaca gtctccgtga gaggcttgat gaaaccctca ctgccaacag gaatgaaatt 120

ttggcccttc tgtcaaggat cgaagccaag ggcaagggca tcctgcaaca ccaccaggtc 180

attgctgagt ttgaggaaat ccctgaggag aacagacaga agctcactga tggtgcc 237

<210> 2568
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2568

cttctcttta cacccccctc tctattttgc gttcattctg tcttcttgaa gtctttccct 60

agccaatggc cactgatcgt ttgacccggg ttcacagtct ccgtcagagg cttgatgaaa 120

ccctcactgc caacaggaac gaaattttgg cccttctgtc aaggatcgaa gctaagggca 180

acgggatctt gcaacaccac caggtcattg ctgagtttga ggaaatccct gaggagaaca 240

ggcagaagct tactgatggt g 261

<210> 2569
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2569

acacccccct ctctattttg cgttcattct gttttacagt tgaagtcttt ccatagccaa 60

tggccactga tcgtttgacc cgggttcaca gtctccgtga gaggcttgat gaaaccctca 120

ctgccaacag gaacgaaatt ttggcccttc tgtcaaggat cgaagctaag ggcaagggga 180

tcctgcaaca ccaccaggtc attgctgagt ttgaggaaat cctgaggaga acaggcagag 240

cttactgatg gtgctatgga gaa 263

<210> 2570
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2570

ctgttttcca gttgaagtct ttccctagcc aatggccact gatcgtttga cccgggttca 60

cagtctccgt gagaggcttg atgaaaccct cactgccaac aggaacgaaa ttttggccct 120

tctgtcaagg atcgaagcta agggcaaggg gatcctgcaa caccaccagg tcattgctga 180

gtttgaggaa atccctgagg agaacaggca gaagcttact gatggtgcc 229

<210> 2571
<211> 265
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (90)
<223>

<400> 2571

cttctcttta caccccccctc tctattttgc gttcattctg ttttccagtt gaagtctttc 60

cctagccaat ggccactcga tcgtttgacn cggggtcaca gtctccgtga gaggcttgat 120

gaaaccctca ctgccaacag gaacgaaatt ttggcccttc tgtcaaggat cgaagctaag 180

ggcaagggga tcctgcaaca ccaccaggtc attgctgagt ttgaggaaat ccctgaggag 240

aacaggcaga agcttactga tggtg 265

<210> 2572
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2572

gttcattctg ttttcttgaa gtctttccct agccaatggc cactgatcgt ttgacccggg 60

ttcacagtct ccgtgagacg cttgatgaaa ccctcactgc caacaggaac gaaattttgg 120

cccttctgtc aaggatcgaa gctaagggca aggggatcct gcaacaccac caggtcattg 180

ctgagtttga ggaaatccct gaggagaaca ggcagaagct tactgatggt gcctttggag 240

aagtcttgag atctacacag gaag 264

<210> 2573
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2573

ctttataccc cccctctctt tttttgcgtt cattctgttt tcctgttgaa gtctttccct 60

agccaatggc caccgatcgt ttgacccggg ttcacagtct ccgtgagagg cttgatgaaa 120

ccctcactgc caacaggaat gaaattttgg cccttctgtc aaggatcgaa gccaagggca 180

agggcatcct gcaacaccac caggtcattg ctgagtttga ggaaatccct gaggagaaca 240

gacagaagct ca 252

<210> 2574
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2574

ctctttatac cccccctctc ttttttgcgt tcattctgtt ttcctgttga agtctttccc 60

tagcaaatgg ccaccgatcg tttgacccgg gttcacagtc tccgtgagag gcttgatgaa 120

accctcactg ccaacaggaa tgaaattttg ggccttctgt caaagatcga agccaagggc 180

caaggcatcc tgcaacacca ccaggtcatt gctgaatttg aggaaatccc tgaggagaac 240

ag 242

<210> 2575
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2575

tctttatatc ccccggcgct tgtgtgcggt cattctgttt tgctgttgaa gtcggtccta 60

gccagtgggc accgatcgtt tgacccgggt tcacagtctc cgtgagaggc ttgatgaaac 120

cctcactgcc aacaggaatg aaattttggc ccttctgtca aggatcgaag ccaagggcaa 180

gggcatcgtg caacaccacc aggtcattgc tgagtttgag gaaatccctg atgagaacag 240

acagaagctc actgatggtg cctttggag 269

<210> 2576
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2576

attcggctcg agcttctctt tacacccccc tctctatttt gcgttcactc tgtattccag 60

ttgacgtctt tccctagcca atggccactg atcgcttgac ccgggttcac agtctccgtg 120

agaggcttga tgataccctc actgccaaca ggatcgaaat tttggccctt ctgtcaagga 180

tcgaagctaa gggcaagggg atcctgcaac accaccaggt cattgctgag tttgaggaaa 240

tccctgagga gaaca 255

<210> 2577
<211> 142
<212> nucleic acid
<213> Glycine max

<400> 2577

acccccctct ctattttgcg ttcattctgt tttccagttg aagtctttcc ctagccaatg 60

gccactgatc gtttgacccg ggttcacagt ctccgtgaga ggcttgatga aaccctcact 120

gccaacagga acgaaatttt gg 142

<210> 2578

<211> 158
<212> nucleic acid
<213> Glycine max

<400> 2578

ctttacaccc cctctctatt ttgcgttcat tctgttttcc agttgaagtc tttccctagc 60

caatggccac tgatcgtttg acccgggttc acagtctccg tgagaggctt gatgaaaccc 120

tcactgccaa caggaacgaa attttggccc ttctgtca 158

<210> 2579
<211> 132
<212> nucleic acid
<213> Glycine max

<400> 2579

cttctcttta caccccctc tctattttgc gttcattctg tttaccagtt gaagtctttc 60

cctagccaat ggccactgat cgtttgaccc gggttcacag tctccgtgag aggcttgatg 120

aaaccctcac tg 132

<210> 2580
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2580

gtgcccttga aaatgagatg ctccttcgga tcaagaaaca gggacttgat ttcactccaa 60

gaattctaat agttaccagg ttaatacctg atgcaaaggg gacaacatgc aaccagcggc 120

tagaaagagt cagtggtact gaccatactc atattttgcg agttccattc agatcagagt 180

caggaactct ccgtaaatgg atttcaaggt ttgatgtgtg gccttatcta gagacttatg 240

cagaggatgt tgccagtga 259

<210> 2581
<211> 221
<212> nucleic acid
<213> Glycine max

<400> 2581

tgatttcact ccaagaattc taatagttac caggttaata cctgatgcaa aggggacaac 60

atgcaaccag cggctagaaa gagtcagtgg tactgaccat actcatattt tgcgagttcc 120

attcagatca gagtcaggaa ctctccgtaa atggatttca aggtttgatg tgtggcctta 180

tctagagact tatgcagagg atgttgccag tgaaattgct g 221

<210> 2582
<211> 437
<212> nucleic acid
<213> Glycine max

<400> 2582

ctctcatgct tttttccact tgcaaacttc aaattcactc tgacagtttt tgcagctaag 60

taagaagaac ttaacagaca tataaacata gtgatcgtta tgtctacgca accaaagctt 120

ggtcggattc ccagtatcag agaccgagtt gaagacactc tctctgctca ccgtaacgaa 180

ctcatttctc tcctctccag gtatgtggct caagggagag ggattttgca accccataat 240

ttgattgatg aacttgacaa catccctggc gatgatcaag caatagtgga tcttaaaaat 300

ggtccctttg gtgaaatcgt caagtctgca aaggaagcca tagttttgcc tcctttttgtg 360

gcaatagcag ttcgtccaag acctggtgtt tgggaatatg tccgtgttaa tgtctctgag 420

ctcagcgtgg agcaatt 437

<210> 2583
<211> 394
<212> nucleic acid
<213> Glycine max

<400> 2583

cacgcgtcag ggataccttg cagcccttgc ttgatttcct ccgagctcac aaatacaagg 60

gccatgctct gatgttaaat gatagaatac aaaccatttc caaacttcag tctgcattgg 120

ccaaggctga ggattatctc tctaagcttg cacatgatac actctattca gagtttgaat 180

atgtattgca aggaatgggt tttgagagag gttggggtga tactgctgaa cgggtattgg 240

aaatgatgca tctgctattg gatattcttc aggctcctga tccttctaca ctagagactt 300

ttcttgggag agtaccaatg gtattcaatg ttgctatatt atctcctcat ggctactttg 360

gacaagccaa tgtcttgggt ttgcctgaaa ctgg 394

<210> 2584

<211> 391
<212> nucleic acid
<213> Glycine max

<400> 2584

tacggctgcg agaagacgac agaaggggga agagaaggcc gagatgaaga agatgtacgg 60

cctgatcgag acctacaagt tgaacgggca attcagatgg atttcatctc agatgaaccg 120

tgtgaggaac ggagagctgt accgtgtgat ctgcgacacc aagggagctt tcgtgcagcc 180

ggctatatac gaggcttttg gtttgacagt ggttgaggcc atgacttgtg ggttgccaac 240

attcgccaca tgcaatggtg gtcctgctga gatcattgtg catggcaagt ctggcttcca 300

cattgaccct taccatggtg accgtgctgc tgatctcctt gttgacttct ttgagaagtg 360

caagcttgac ccaacccact gggaaacaat c 391

<210> 2585
<211> 398
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (382),(389)
<223> unsure at all n locations

<400> 2585

cccacgcgtc cgcccacgcg tccgcccacg cgtccgccca cgcgtccgcg gctgcgagaa 60

gacgacagaa ggggtacggc ctgatcgaga cccacaagtt gaacggccaa ttcagatgga 120

tttcatcgca gatgaaccgt gtgaggaatg gagagctcta ccgcgtgatc tgcgacacca 180

ggggtgcttt cgtgcagcct gctgtatacg aggcttttgg tttgacagtg gttgaggcca 240

tgacttgcgg cttgccaaca ttcgccacat gcaatggtgg tcctgctgag atcattgtgc 300

acggcaagtc tggcttccac attgaccctt accatggtga ccgtgctgct gatctccttg 360

ttgacttctt tgagaagtgc angcttganc caactcac 398

<210> 2586
<211> 415
<212> nucleic acid
<213> Glycine max

<220>

<221> unsure
<222> (350)
<223>

<400> 2586

gttcgtgcct tggagaatga gatgctcaac cgcatcaaga agcaaggcct tgatatcacc 60

cctcgtattc tcattattac tcgtcttctc cctgatgcag taggaactac ctgtggccaa 120

cgtctagaga gggtatatga tactgaatat tgtgacattc tccgagttcc tttcagaacc 180

gaaaagggaa ttgttcgcaa atggatctca agattcgaag tctggccata cctagagact 240

tacactgagg atgttgccct tgaacttgcc aaggagttgc aagccaagcc agatctgatc 300

gttggaaact acagtgatgg aaacattgtt gcctctttgt tagcacatan attaggagta 360

actcagtgta ccattgctca tgctctagaa aagaccaagt accctgagtc tgaca 415

<210> 2587
<211> 403
<212> nucleic acid
<213> Glycine max

<400> 2587

gaaatatcat ttctcatgcc aatttactgc tgatcttttt gcaatgaacc acacagactt 60

tatcatcacc agcaccttcc aagagattgc tggaagcaag gacactgttg gacagtatga 120

gagtcacact gccttcaccc ttccaggact ttaccgtgtt gttcacggta ttgatccatt 180

tgatccaaag ttcaacattg tctctcccgg tgcagacatg ggtatatact tcccatacac 240

tgaaactgag cgtaggttaa cagaattcca ctctgacatt gaagagcttc tttacagctc 300

agtggagaat gaggaacaca tatgcgtatt gaaggaccgc aacaaaccaa taatcttcac 360

catggcaagg cttgaccgtg tgaagaacaa cacggggctt gtc 403

<210> 2588
<211> 417
<212> nucleic acid
<213> Glycine max

<400> 2588

acgtacggct gcgagaagac gacagaaggg gatggaaaca ttgttgcctc tttgttagca 60

cataaattag gagtaactca gtgtaccatt gctcatgctc tagaaaagac caagtaccct 120

gagtctgaca tttactggaa aaaatttgaa gagaaatatc acttctcatg ccaatttact 180

gctgatcttt ttgcaatgaa ccacacagac tttatcatca ccagcacctt ccaagagatt 240

gctggaagca aggacactgt tggacagtat gagagtcaca ctgccttcac ccttccagga 300

ctctaccgtg ttgttcacgg tattgatccc tttgatccaa agttcaacat cgtctcttcc 360

ggttgccgac atgagcataa acttcgcata cactgaaact gagcgtaggt taacaga 417

<210> 2589
<211> 455
<212> nucleic acid
<213> Glycine max

<400> 2589

caggtacacg tggaagattt attccgaaag gcttatgact ttggcgggag tttatagttt 60

ctggaaatgc gtttccaaat tagagaggcg tgaaactcga cgatatcttg agatgttcta 120

tatcctcaag ttccgtgatt tggcaaattc tgttccgcta gctaaggatg atgcaagtta 180

actagctata taatttcacc aaaggcttga cagcagacat aataagagtc atttatgtaa 240

atataatagt ctgcttctcg tgttttgaaa tctagtgagg cgacctagag gagtttcatg 300

gaagacttgt cttgtctatg ttaacttcga ttatgtaaga gatggcgagc actggttgtt 360

gaatttggat gtctcttgtt ttcgtttgat tagtagtcat caatgatata gacctggaaa 420

ttacctgtga cttgaggatg ttatccttac tgatg 455

<210> 2590
<211> 381
<212> nucleic acid
<213> Glycine max

<400> 2590

gttcattctg ttttccagtt gaagtctttc cctagccaat ggccactgat cgtttgaccc 60

gggttcacag tctccgtgag aggcttgatg aaaccctcac tgccaacagg aacgaaattt 120

tggcccttct gtcaaggatc gaagctaagg gcaaggggat cctgcaacac caccaggtca 180

ttgctgagtt tgaggaaatc cctgaggaga acaggcagaa gcttactgat ggtgcctttg 240

gagaagtctt gagatctaca caggaagcca tagttttgcc accatgggtt gctctggctg 300

ttcgtccaag gcctggtgtg tgggagtacc tgaaagtgaa tgtgcacgct cttgttgttg 360

aggagttgca acctgctgag t 381

<210> 2591
<211> 276
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (207),(217),(226),(228)...(229),(231),(233)...(234),
(237),(239)...(240),(243),(265)...(266)
<223> unsure at all n locations

<400> 2591

gttgatgcta ttatcaagtg tcaaggtctt cctacaacat caggatacat ggttgtaaat 60

atggaatggg gaaacttttg gtcatctcat ttaccaagaa catcttatga tattgattta 120

gactctgaaa gccctaatcc aaatgatcag ggttttgaga aaatgatatc tggaatgtat 180

cttggtgaca tcgtgaggag agtcatncta aggatgncgc tagagncnnt ntnnctngnn 240

ccnattcttc caaactttca agccnntatg ctgagg 276

<210> 2592
<211> 153
<212> nucleic acid
<213> Glycine max

<400> 2592

gttgaagaag ccctactctc tcgacgcctc tttcctctcc gacatcgaga acgacccctt 60

cgagaacctg caagagactc acgatatctt cgtcaaccag atgggtatca agcccattgg 120

gcttaagtta gagtttccgg ggggttttcg aaa 153

<210> 2593
<211> 223
<212> nucleic acid
<213> Glycine max

<400> 2593

ccgggcttcc catgataccc agctatgttg aaaatcttcc cactgggaat gagaaagggt 60

tgttttatgc cttggatctc ggaggaacca acttccgtgt gctgagggtg cagttgggtg 120

gcaaagatga gcgtgtcatt gccaccgagt ttgatcaagt ttccatacct catcaactca 180

tgtttgctac atctcaggag ctgtttgatt tcattgcttc ggg 223

<210> 2594
<211> 257
<212> nucleic acid
<213> Glycine max

<400> 2594

tgcacgcggg tcttgcttct gaaggtggca gcaagctcaa gatgttgatc acttatgttg 60

ataatctccc ttctggggat gagaaaggac tcttttatgc attagacctt ggtggcacaa 120

acttccgaac ccttcgcgtg catttaggtg ggaaggagaa aggtgttgtc aaaatagagt 180

ctgatgaagt ttccattcct cctcatttga tgactggttc ttcacaagaa ttatttgatt 240

ttatagcatc taaacta 257

<210> 2595
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2595

atttgatgac tggttcttca caagaattat ttgattttat agcatctaaa ctagcaaaat 60

tcgttagttc tgagcctgaa gagttacacc ctccccctgg cagacaaagg gaattgggtt 120

ttaccttctc atttccagtg aggcaaacat caattgcatc tgggaatata ataaagtgga 180

ctaaaggttt caatcttgag gatgcggttg gagaagatgt ggtgggtgaa ctgaccaagt 240

ccttag 246

<210> 2596
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2596

gcagattcta caatcaggat gtcattgctg ctgtgattct tggtactggg acaaatgcag 60

catatgtaga acgagcacat gctattccaa aatggcatgg gcttatacca aaatcaggag 120

atatggttat aaacatggag tggggtattt ccgatcatca catcttcctc taacagaata 180

tgatctagct ccggatgctc agagcttaaa ccctggagaa cagatttttg agaaattgat 240

ttctggcatg tatttggggg aa 262

<210> 2597
<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2597

atcggttggg aggctgaggc aggtggtgga tgctatggcc gttgagatgc acgctgggtt 60

ggcatcagaa ggtggttcca agctcaaaat gcttctcaca tatgttcata atctccctaa 120

tgggactgag aaaggaacat attatgcact agatcttggg ggtactaatt ttcgggtttt 180

gcgggttcat ttgcatggtc aacaatcttc tgttttggaa catgaagtag agcgacaccc 240

attcctcaaa atct 254

<210> 2598
<211> 267
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (254)
<223>

<400> 2598

ctcccatcag aggacaaagc ttccgacttt gcgggattcg ttcgtatttg tttcagtgct 60

gtgatgggga aggtcgcggt gggagctgcc gttgtctgcg ccgccgccgt atgcgctgcg 120

gcggcgctgg tggtgcgcca ccgcatgatt cgttcccgga agtggagtcg cgccatggcg 180

atactgaagg agtttgagga gaagtgtggc accccaattg tgaagctaag acaagtgcgc 240

tgatgccatg gatnttgaga tcacgcg 267

<210> 2599
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2599

gttacaccct ccccctggca gacaaaggga actgggtttt acattctcat ttccagtgaa 60

gcaaacatcc atagcatctg ggactctaat aaagtggact aaaggtttca atattgagga 120

tgcggttgga gaagatgtgg tgggtggact aaccaagtcc ttagaaaaaa ttggtctgga 180

tatgcgtgtt gcagctctag ttaatgacac agttggaact gtggctagag ctagattcag 240

caatcaggat gt 252

<210> 2600
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2600

tgaagatgcg gttggtgaag atgtggtggg agaactaacc aagtccatgg aaaaaattgg 60

cctggatatg cgcgttgctg ctctagtcag tctcactctc ctctcttttg gatttcttta 120

ttttttatag ccggatttga gcatgatggt ttccagtttg tgtctgacag aaatttggag 180

ttataaggtt aatgatacca ttggaacatt agctggaggc agattctaca atcaggatgt 240

cattgctgct 250

<210> 2601
<211> 252
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (238),(242),(248)
<223> unsure at all n locations

<400> 2601

gatatattag agatcaataa cacatccctg aaaatgagga agattgttgt ggaactctgt 60

gatattgttg ctaatcgggg agcccgcctt tctgctgctg gtatttttgg catcctcaag 120

aaaataggaa gagacacagt aaaggacggg aagaaatcag tagtagcact ggatggagga 180

ttgtttgaac actatactaa ttcagagttc cttggagagt acaaaaaggt ttttgggnaa 240

cncccccnac ca 252

<210> 2602
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2602

cgataatctc ccaactgggg atgaggaagg cctctattat gcattggatc ttggcggcac 60

aaacttccgt gtccttcgtg tacatttagg ggggaaagac aaaggtgtta tcggccagga 120

gtttgaagaa gtttcaattc ctccaaattt gatgactggc tcttcagatg cattgttcga 180

ttttatagca gcaggtcctg caaagtttgt tgggtcagaa ccctgaaggt ttcatctccc 240

cctgggaaga caagaggact gggtttac 268

<210> 2603
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2603

attttgggca tccttaagaa aataggaaga gacacggtta aggttgggga gaagcaaaag 60

tcagtgatag ctttggatgg gggattgttt gaacactaca ccaaatttag agaatgcttg 120

gagggtaccc tgaaggaatt gctgggagat gaggctgctg agaccattgt cattgagcat 180

gctaatgatg gctctggcat tggtgcagcc ctcctggcag cttctcactc ccaatatttg 240

ggagtggagg agtcttaaat tttattgc 268

<210> 2604
<211> 224
<212> nucleic acid
<213> Glycine max

<400> 2604

ctcaaacaca tcccttaaaa tgaggaagat cgttgttgaa ctgtgtgaca ttgttgctac 60

tcgcggagct cggcttgctg ctgctggtat tttgggcatc cttaagaaaa taggaagaga 120

cacagttaag gttggggaga agcaaaagtc agtgatagcg ttggatgggg ggttgtttga 180

acactacacc aaatttagag aatgcttgga gagtgcactg aagg 224

<210> 2605
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2605

cgatctgcac gctgggttgg catcagaagg tggttctaaa ctcaaaatgc ttataacatt 60

tgttcataat ctccctaatg ggactgagaa aggaacatat tatgcactag atcttggggg 120

tacaaatttt agggttttgc gggttcattt gcatggtcaa caatcgtctg ttttggaaca 180

tgaagtagag cgacagccca ttcctcaaca tctaatgacc agcacaagtg aggatctctt 240

tgatttcctt gcttcttcat taaag 265

<210> 2606
<211> 266
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (189)...(190)
<223> unsure at all n locations

<400> 2606

accaagtcca tggaaaaaat tggcctggat atgcgcgttg ctgctctagt taatgatacc 60

attggaacat tagctggagg cagattctac aatcaggatg tcgttgctgc tgtgattctt 120

ggtactggga caaatgcagc atatgtagaa cgtgcacatg ctattccaaa atggcatggc 180

cttataccnn aatcaggaga tatggttata aacatggagt ggggtaattt ccgatcatca 240

catcttcctc taacagaata tgatct 266

<210> 2607
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2607

gtttggaaaa tctgtcccgc agacactatc tacacctttc atactcggga cctcagatct 60

atgtgccatg caacaggact gttctggcga tttacatgca gttgggtctc tcctctacga 120

taaagcaggg gttgaatcca atttaagtga aagagaaaca gttttggagg tttgtgagac 180

tattgtaaag cgaggcggga gcttagctgg tgcaggaata gtggggattc tacaaaaaat 240

ggaagaggac cagagaggtc t 261

<210> 2608
<211> 268

<212> nucleic acid
<213> Glycine max

<400> 2608

tctcgagccg ctcgagccgc ggctcgagaa ttgttagacg agtgcacgct ggaaatggct 60

gaagacggtg acctgtttgg aaaatctatc ccgcagacac tatctacacc tttcatactc 120

gggacctcag atctatgtgc catgcaacag gactgttctg gcgatttaca tgcagttggg 180

tctctcctct acgataaagc aggggttgaa tccaatttaa gtgaaagaga aacagttttg 240

gaggtttgtg agactattgt aaagcgag 268

<210> 2609
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2609

caagaaaata ggaagagaca cagtaaagga cgggaagaaa tcagtagtag cactggatgg 60

aggattgttt gaacactata ctaaattcag aagttccttg gagagtacac taaaggagtt 120

gttgggagat gaggcagctg agacaattgg cattgagcag tctaatgatg gctctggaat 180

tggagcagcc ctcctggcag cttctcactc ccagtatttg gaagtgcagg agtcctgaag 240

atgtggttaa tgtcaaggta a 261

<210> 2610
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (5),(24),(31),(38)...(39),(42),(53)...(54),(99),(111),
(132),(144),(224),(227)
<223> unsure at all n locations

<400> 2610

cgggnagaaa tcagtagtag cacngcatgg nggattgnnc cnacactata ctnncattca 60

gaagttcctt ggagagtaca ctaaaggagt tgttgggcnt gaggcagctg ngacaattgg 120

cattgagcag tntaatgatg gctncggaat tggagcagcc ctcctggcag cttctcactc 180

ccagtatttg gaagtgcagg agtcctgaag atgtggttta atgncanggt aaatcagtgt 240

aacatagttt catttttga tacc 264

<210> 2611
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2611

cccaaattga aagttccttt catacttagg acgcctgaca tgtcagccat gcaccatgac 60

acaagttctg atctgaaagt ggttggaaac aagttaaagg atatattaga gatctcaaac 120

acatccttaa aatgaggaag atcgttgttg aactgtgtga cattgttgct actcgcggag 180

ctcggcttgc tgctgctggt attttgggca tccttaagaa aataggaaga gacacagtta 240

aggttgg 247

<210> 2612
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2612

gaagttgtaa ggagagcttt attgaagatg gccgaagaag ctgacttttt tggcgatact 60

gtgcccccca aattgaaagt tcctttcata cttaggacgc ctgacatgtc agccatgcac 120

catgacacaa gttctgatct gcaagtggtt ggaaacaagt taaaggatat attagagatc 180

tcaaacacat cccttaaaat gaggacgatc gttgttgaac tgtgtgacat tgttgctact 240

cgcggag 247

<210> 2613
<211> 278
<212> nucleic acid
<213> Glycine max

<400> 2613

cggctcgagt tcacagattt ttgagaaatt gatttctggc atgtatttgg gggaaattgt 60

aaggagagct ttatttaaga tggccgaaga agctgatttt tttggagata ctgttccccc 120

caaattgaaa gttcctttca tacttaggac gcctgacatg tcagccatgc accatgacac 180

aagttctgat ctgaaagtag ttggaaacaa attaaaggat atattagaga tctctaacac 240

atccctaaaa atgaggaaga ttgttgttga actgtgtg 278

<210> 2614
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2614

tgcccaaaat accagcagca gcaagccgag ctccgcgagt agcaacaatg tcacacagtt 60

caacaacgat cttcctcatt ttaagggatg tgtttgagat ctctaatata tcctttaact 120

tgtttccaac cactttcaga tcagaacttg tgtcatggtg catggctgac atgtccaggc 180

gtcctaaaga aaattatgtc agaactccaa aagctctatt tcaacaaaag gtaatgtgtt 240

caaatgaag 249

<210> 2615
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2615

ggtcgcgtgg tggctattgt gaaagagttt gaggagcagt gtaggacccc aattgggaag 60

ctgagacagg ttgctgacgc catggacgtt gagatgcacg cgggtcttgc ttctgaaggt 120

ggcagcaagc tcaagatgtt gatcacttat gttgataatc tcccttctgg ggatgagaaa 180

ggactctttt atgcattaga ccttggtggc acaaacttcc gaacccttcg cgtgcattta 240

ggtgggaagg agaaa 255

<210> 2616
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2616

gcggcggcgt gtgctgcggt ggcgctggtg gtgcgcaccg atgatgagct ccggaaagtg 60

gggtcgcgtg gtggctattg tgaaagagtt tgaggagcag tgtaggaccc caactgggaa 120

gctgagacag gttgctgacg ccatggacgt tgagatgcac gcgggtcttg cttctgaagg 180

tggcagcaag ctcaagatgt tgatcactta tgttgataat ctcccttctg ggatgagaa 240

aggatctt 248

<210> 2617
<211> 263
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (214)
<223>

<400> 2617

atgaggagct ccggaaagtg gggtcgcgtg gtggctattg tgaaagagtt tgaggagcag 60

tgtaggaccc caattgggaa gctgagacag gttgctgacg ccatggacgt tgagatgcac 120

gcgggtactg cttctgaagg tggcagcaag ctcaagatgt tgatcactta tgttgataat 180

ctccctctgg ggatgagaaa ggactcttta tgcnttagac ctggtggcac aaacttccga 240

accctcgctg cattagtggg aag 263

<210> 2618
<211> 143
<212> nucleic acid
<213> Glycine max

<400> 2618

cagtgttgga ccccaatttc gaagctgaga caggttgctg atgccctgga cgttgagatg 60

cacgctggtc ttgcttctga aggtggatgt aagctcaaga tgttgatcac ttatgttgat 120

aatctccctt ctggggatga gaa 143

<210> 2619
<211> 279
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (12),(31),(33),(54),(62)
<223> unsure at all n locations

<400> 2619

cggtcgtttg cncggcggcg gcgtgtgctc ncngtggcgc tggtggtgcg ccancgcatg 60

angagctccg gaaagtgggg tcgcgtggtg gctattgtga aacagtttga ggagcagtgt 120

aggaccccaa ttgggaagct acgacagttg ctgacgccat ggacgttgag atgcacgcgg 180

gtcttgcttc tgaaggtggc agcaagctca agatgttgat cacttatgtt gataatctcc 240

cttctgggga tgagaaagga ctcttttatg cattagacc 279

<210> 2620
<211> 289
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (63),(75),(88),(101),(199),(203)
<223> unsure at all n locations

<400> 2620

catcaattgc atctgggaat ataataaagt ggactaaagg tttcaatatt gaggatgcgg 60

ttngagaaag atgtngtggg tgaactgncc aagtccttag naaaaattgg tctggatatg 120

catgttgcag ctctagttaa tgacacagtt ggaacagtgg ctagagcaag attcagcaat 180

caggatgtca ttgctggant gantcttggt actgggacaa atgcagctta tgtagagtgt 240

gcacatgcaa ttccacaatg gcatggtctt ctaccaaaat caggagacc 289

<210> 2621
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2621

actcgagccg attcggctcg agtgaggatg cggttggaga agatgtactg ggtggactaa 60

ccacagtctt agaaaaaatt ggtctggata tgcgtgttgc agctctagtt aatgacacag 120

ttggaactgt ggctagagct agattcagca atcaggatgt cattgctgga gtgattcttg 180

gtacagggac aaatgcagct tatgtagagt gtgcacatgc aattccaaaa tggcaaggtc 240

ttctaccaaa atcaggagag atgg 264

<210> 2622
<211> 270
<212> nucleic acid

<213>	Glycine max

<400>	2622

gagaacagat ttttgagaag ataatttctg gtatgtattt gggtgaaatt gtaaggagag 60

ttttgttgaa gttggctgaa gaagttgact tctttggaga tactgttcct ccaaaattga 120

gaattccttt cgtacttagg acacctgaca tgtctgcaat acatcaagat acatcttcag 180

atctgaaggt ggttggaaac aaattgaagg atatattaga gatcaataac acatccctga 240

aaatgaggaa gattgttgtg gaactctgtg 270

<210>	2623
<211>	273
<212>	nucleic acid
<213>	Glycine max

<400>	2623

atttctggta tgtatttggg tgaaattgta aggagagttt tgttgaagtt ggctgaagaa 60

gttgacttct ttggagatac tgttcctcca aaattgagaa ttcctttcgt acttaggaca 120

cctgacatgt ctgcaataca tcaagataca tcttcagatc tgaaggtggt tggaaacaaa 180

ttgaaggata tattagagat caataacaca tccctgaaaa tgaggaagat tgttgtggaa 240

ctctgtgata ttgttgctaa tcggggagcc cgc 273

<210>	2624
<211>	267
<212>	nucleic acid
<213>	Glycine max

<400>	2624

cagagaggtc tcgtctttgg gaatgggaag agaagtgttg ttgccattga tgggggctta 60

tatgaaaatt atcctcaata cagggcttat ttgcaagatt cagtcacaga gctgctagga 120

acagaaaagt caaacaatgt ggtgatagag catactaaag atggatctgg aataggagct 180

gctctattgg ctgcttcaaa ctccatgtac aaccaagact tatagtccat tatcatgcaa 240

ataaaaattg aaggaataat ccattt 267

<210>	2625
<211>	280
<212>	nucleic acid

<213> Glycine max

<400> 2625

cagagaggtc tcgtctttgg gaatgggaag agaagtgttg ttgccattga tgggggctta 60

tatgaaaatt atcctcaata cagggcttat ttgcaagatt cagtcacaga gctgctagga 120

acagaaaagt caaacaatgt ggtgatagag catactaaag atggatctgg aataggagct 180

gctctattgg ctgcttcaaa ctccatgtac aaccaagact tatagtccat tatcatgcaa 240

ataaaaattg aaggaataat ccatttttcc ttttgtatat 280

<210> 2626
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2626

ttgaaaacaa gtccacagta ctttttatg gtggtggggc tttagttgct gtttggctat 60

cgtcgattct tgtgagcgcc atcaactctg ttcccttgct tccaaagatt atggagttgg 120

tggggctagg gtacactgga tggtttgtct accgatacct tctgtttaag tctagcagga 180

aggagctagc tacagacatt gagtcactga agaagaaaat tactggaact gaatagagtg 240

gtgttagc 248

<210> 2627
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2627

cttatcttcc ctcaaccact tctcagtgtc ccgaaaatct tctcaccttc agaccagagc 60

ttcttcagag gaatcatcct cagtagatgc caatgaggtg ttcacagatt tgaaggaaaa 120

gtgggatgct cttgaaaaca agtccacagt actttttat ggtggtgggg ctttagttgc 180

tgtgtggcta tcgtcgattc ttgtgagcgc catcaactct gttcccttgc ttcc 234

<210> 2628
<211> 430
<212> nucleic acid
<213> Glycine max

<400> 2628

aatgacacag ttggaacagt ggctagagca agattcagca atcaggatgt cattgctgga 60

gtgatccttg gtacggggac aaatgcacct tatgtagagt gtgcacatgc aattccaaaa 120

tggcatggtc ttctaccaaa atcaggagag atggttatta acatggagtg ggtaatttc 180

cgttcctcgc atcttcctct aacagaatat gatcatgctc tagatgcaga gagcttaaac 240

cctggagaac agatttttga gaagataatt tctggtatgt atttgggtga aattgtaagg 300

agagttttgt tgaagttggc tgaagaagtt gacttctttg gagatactgt tcctccaaaa 360

ttgagaattc ctttcgtact taggacacct gacatgtctg caatacatca agatacatct 420

tcagatctga 430

<210> 2629
<211> 413
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (362)
<223>

<400> 2629

agcccacgcg tccgtacggc tgcgagaaga cgacagaagg ggttggatgg ggggttgttt 60

gaacactaca ccaaatttag agaatgcttg gagagtgcac tgaaggaatt gctgggagat 120

gaggctgctg agaccattgt cattgagcat gctaatgatg gctctggcat tggtgcagcc 180

ctcctggcag cttctcactc ccaatatttg ggagtggagg agtcttaaat tttattgcca 240

aacaagggaa agacgtgtaa tactagtttc attttttgca taggtggtag atcaacacat 300

tgaagcaatg gtgccttgca gctggtgact ggggggcat tcattatttt ggtttcagtg 360

tntgtttctc cctcgtttaa gggaatatat caaagatata aacttcacct tga 413

<210> 2630
<211> 402
<212> nucleic acid
<213> Glycine max

<400> 2630

tgctaatcgg ggagcccgcc tttctgctgc tggtattttt ggcatcctca agaaaatagg 60

aagagacaca gtaaaggacg ggaagaaatc agtagtagca ctggatggag gattgtttga 120

acactatact aaattcagaa gttccttgga gagtacacta aaggagttgt tgggagatga 180

ggcagctgag acaattggca ttgagcagtc taatgatggc tctggaattg gagcagccct 240

cctggcagct tctcactccc agtatttgga agtgcaggag tcctgaagat gtggtttaat 300

gtcaaggtaa atcagtgtaa cactagtttc atttttttgt atacctacta gatcaacaga 360

ttgaaacaga aaagtcttcg ttactagtcc tagagagctt tt 402

<210> 2631
<211> 445
<212> nucleic acid
<213> Glycine max

<400> 2631

gtccgtaaag ctgcgagaag acgacagaaa gggacatcac attttctcaa agtaatttat 60

tacttactaa ataaatggcg gcggcagcag cagtgacggt gctactctca tctatgattc 120

cgaccgccac caacgttaca cgctgctctg ctttgccttc tctgcctcct cgcggcatca 180

acactaaaac cactttgctc ttatcttccc tcaaccactt ctcagtgtcc cgaaaatctt 240

ctctgcttca gaccagagct tcttcagagg aatcatcctc agtagatgcc aatgaggtgt 300

tcacagattt gaaggaaaag tgggatgctc ttgaaaacaa gtccacagta ctttttttatg 360

gtggtggggc tttaattgct gtttggctat cgtcgattcg tgtgagcgcc atcaactctg 420

ttcccttgct tccaaagatt atgga 445

<210> 2632
<211> 400
<212> nucleic acid
<213> Glycine max

<400> 2632

ggggatagat agagtgatac gcgtcacgtt ttcataataa taaaaaaatg gcagcggcgg 60

cggcagtgac ggtgctactc ccacctagga ttccgaccac caccaacgtt acccgctgct 120

ctgctttgcc ttctctccct cctcgcgtct ccaacaccaa aaccactttg ttctcacctt 180

ccctcaacaa cttttcagtg tcccgaaaat cttctctgct tcagaccata gcttcttcag 240

aggaatcatc ctcagtagat gccaatgagg tgttcacaga tttgaaggaa aagtgggatg 300

ctcttgaaaa caagtccaca gtacttcttt atggtggaag ggctatagtt gctatttggc 360

tatcgtcaat tcttgtgagc gccatcaact cagttccctt 400

<210> 2633
<211> 413
<212> nucleic acid
<213> Glycine max

<400> 2633

gatagataga gtgatacaca tcacattttc tcaaagtaag ttattaatta ataaataaat 60

ggcggcggcg gcggcagtga cggtgctact cccacctagg attccgaccg ccaccaacgt 120

tacccgctgc tctgctttgc cttctctgcc tcctcgcggc accaacacta aaaccacttt 180

gctcttatct tgcctcaacc acttctcagt gtcccgaaaa tcttctctgc ttcagaccag 240

agcttcttca gaggaatcat cctcagtaga tgccaatgag gtgttcacag atttgaagga 300

aaagtgggat gctcttgaaa acaagtccac agtacttttt tatggtggtg ggctttagt 360

tgctgtttgg ctatcgtcga ttcttgtgag cgccatcaac tctggtccct tgc 413

<210> 2634
<211> 406
<212> nucleic acid
<213> Glycine max

<400> 2634

aaagttccaa atttttggt ttggggatag atagagtggt acgcgtcaca ttttcataat 60

aataaaaaaa tggcagcggc ggcggcagtg acggtgctac tcccacctag gattccgacc 120

accaccaacg ttacccgctg ctctgctttg ccttctctcc ctcctcgcgt ctccaacacc 180

aaaaccactt tgttctcacc ttccctcaac aacttttcag tgtcccgaaa atcttctctg 240

cttcagacca gagcttcttc agaggaatca tcctcagtag atgccaatga ggtgttcaca 300

gatttgaagg aaaagtggga tgctcttgaa aacaagtcca cagtacttct ttatggtgga 360

ggggctatag ttgctatttg gctatcgtca attcttgtga gcgcca 406

<210> 2635
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2635

cggctcgagc ttctacagca ttcttctgct attcaaatca aattttcaaa ccatggcttc 60

ctccaccaat gatatactac gaaaaggcaa cggtatatac gtgagcttcg gcgagatgct 120

catcgatttc gtccccaccg tctccggcgt gtcccttgcg gaggctcggg ctttcttcaa 180

ggcccccggc gtcggccccc gccaacgtcg ccatcgccgt cgcgaggctc ggcggaaagg 240

cggcgt 246

<210> 2636
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2636

gccatgcaga tcagcacacc tgaaggcaat ggaagttgcc agggaagcag gatgcttgct 60

ctcttatgac ccaaacctgc ggctacccct gtggccctcc gccgaggaag cacgtcagca 120

aatactcagc atatgggaca aggctgatgt aatcaaggtc agtgatgtgg aactggaatt 180

cctaaccgga agtgacaaaa ttgatgatgc atctgctctc tccctgtggc accccaattt 240

gaagttgctc cttgtcact 259

<210> 2637
<211> 294
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (20),(33),(35)...(36),(41),(84),(95),(102)...(103),
(179)
<223> unsure at all n locations

<400> 2637

aaaggtcagt gatgtggagn ttgatcaaat cancnnttct nccaaatgct gagtatttgc 60

ttacgagctt cctcagcatt tggnagaagg ctganttgac annaggtcag tgatgtggag 120

cttgagttcc tcaccggaag tgacaagatt gatgatgaat ctgctttgtc attgtcacnc 180

cccaatttga agttgctcct tgtcactctt ggagaacatg gttccagata ctacaccgag 240

aatttcaaag gatcagtaga tgcttttcat gttaatacag ttgatacaac tggt 294

<210> 2638
<211> 295
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (81),(222),(234),(237),(257),(278),(291),(293)...(294)
<223> unsure at all n locations

<400> 2638

cgccgacgga gagcgtgagt tcatgttcta cagaaacccc agcgccgaca tgctgcctca 60

ccgcccgaag atctcaatct ncgaactcat cagatctggc aaaagtattc ccattatgga 120

tcgataagct tgatacgtgg agccatgcag attcaggcaa caccctgaag ggcaatggaa 180

gttggccagg gaaggcaggc atggcttgct cctcttatgc ancccaaaac ctgncgngct 240

aaaccttgtg ggccctnccg gccgagcgac ggcacgtnca gcccaatacc ncnnc 295

<210> 2639
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2639

ccaagattgt cgatgatcag tccatacttg aagatgaacc aaggttaaga gaagtactaa 60

agtttgcaaa tgcatgtgga gctattacaa ctacccaaaa gggagcaatt ccggcccttc 120

ccaaagagga ggctgcactg aaactgatca aaggggggtc acagaatctt ttggcaaaat 180

gcaaaagtgc tagcatgatt tcgttttctt cccctaatgt ttaaattttc cgttggattt 240

gcttgctata agtttaggag ggaact 266

<210> 2640
<211> 205
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (163)
<223>

<400> 2640

gtgagttctt gtttttccga aatcctagtg ctgatatgct acttcaagag tccgagcttg 60

ataaaaatct cataaagaag gctaaaattt tccattatgg ttccatcagc ttgattgatg 120

agccatgcaa gtctgctcat cttgctgcta tgagatttgc tanagaatct ggttgcattc 180

tttcgtatga tccaaatttg agatt 205

<210> 2641
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2641

cggacttcgg ctcgaggctc atcgacttcg tccccaccgt ctctggcgtg tccctggccg 60

aggcccctgg cttcctcaag gcccccggcg gcgcccccgc taacgtcgcc atcgccgtgt 120

cgcgcctcgg cggcaaagcc gccttcgtcg gcaagctcgg cgacgacgag ttcggccaca 180

tgctcgccgg aatcctcaag gaaaacggcg ttcgcgccga cggcatcaac tttgaccagg 240

gcgcacgcac cgccctggcc ttcgtgaccc tacgcgccga cgggga 286

<210> 2642
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2642

cttctatctc tgcaattcaa acacaaaaac catggcttcc actaatgctc ttcctcccac 60

cggcaacggc ctcatcgtga gcttcggcga gatgctcatc gacttcgttc ccaccgtctc 120

cggcgtgtcc ctcgcggagg ctccgggatt cctcaaggcc cccggcggcg cccccgccaa 180

cgttgccatc gccgtcgcga gactcggtcg caaagcggcg ttcgtcggga agctcggcga 240

cgacgagttc gggcacatgc tggccgga 268

<210> 2643
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2643

cggctcgagc cggcgtgtcc ctcgcggagg ctccgggatt cctcaaggcc cccggcggcg 60

cccccccgcaa cgttgccatc gccgtcgcga gactcggcgc caaagcggcg ttcgtcggga 120

agctcggcga cgacgagttc gggcacatgc tggcccgaat cctgaaggag aacgacgtgc 180

gatccgacgg gatcaacttc gaaaagggcg cgcgcaccgc gctggcgttc gtgaccctac 240

gcgccgacgg ggagcgtgag ttcat 265

<210> 2644
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2644

ccaacgctct tcctcccacc ggcaacagcc tcatcgtgag cttcggcgag atgctcatcg 60

atttcgtccc caccgtctcc ggcgtgtccc ttgcggaggc tccgggcttc ctcaaggccc 120

ccggcggcgc ccccgcaacg tcgccatcgc cgtcgcgagg ctcggcggaa aggcggcgtt 180

cgtcggaaag ctcggcgacg acgagttcgg gcacatgctg gctgagatcc tgaaggagaa 240

cgacgtgcga tacgacggga tca 263

<210> 2645
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2645

ctcgagccgt tctatctctg caattcaaac acaaaaacca tggcttccac taatgctctt 60

cctcccaccg gcaacggcct catcgtgagc ttcggcgaga tgctcatcga cttcgttccc 120

accgtctccg gcgtgtccct cgcggaggct ccgggattcc tcaaggcccc cggcggcgcc 180

cccgccaacg ttgccatcgc cgtcgcgaga ctcggcggca aagcggcgtt cgtcgggaag 240

ctcggcg 247

<210> 2646
<211> 276
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (153),(181),(201),(215),(236),(258),(266)

<223> unsure at all n locations

<400> 2646

actaactctc tcatcttcta cagcattctt ctgcaattca aatcaaattt tcaaaccatg 60

gcttcctcca ccaacgctct tcctcccacc ggcaacggcc tcatcgtgag cttcggcgcg 120

atgctcatcg atttcgtccc caccgtctcc ggngtgtccc ttgcggaggc tccgggcttc 180

ntcaaggccc ccggcggcgc ncccgccaac gtcgncatcg ccgtcgcgag gctcgncgga 240

aaggcggcgt tcgtcggnaa gtcggngacg acgagt 276

<210> 2647
<211> 299
<212> nucleic acid
<213> Glycine max

<400> 2647

tacagcattc ttctgcaatt caaatcaaat tttcaaacca tggcttcctc caccaacgct 60

cttcctccca ccggcaacgg cctcatcgtg agcttcggcg agatgctcat cgatttcgtc 120

cccaccgtct ccggcgtgtc ccttgcggag gctccgggct tcctcaaggc ccccggcggc 180

gcccccgcca acgtcgccat cgccgtcgcg aggctcggcg gaaaggcggc gttcgtcgga 240

aagctcggcg acgacgagtt cgggcacatg ctggctggaa cctgaaggag aacgacgtc 299

<210> 2648
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2648

ctcgagccgc tcgtagcatt tcggcatcca aactaactct ctcatcttct acagcattct 60

tctgcaattc aaatcaaatt ttcaaaccat ggcttcctcc accaacgctc ttcctcccac 120

cggcaacggc ctcatcgtga gcttcggcga gatgctcatc gatttcgtcc ccaccgtctc 180

cggcgtgtcc cttgcggagg ctccgggctt cctcaaggcc cccggcggcg cccccgccaa 240

cgtcgccatc gccgtcgcga ggctcggcgg aaaggcg 277

<210> 2649
<211> 279
<212> nucleic acid

<213> Glycine max

<400> 2649

acggctggcg agaagacgac agaagggggg agaaggctga tttgatcaag gtcagtgatg 60

cggagcttga gttcctcaca ggaagtgaca agattgatga tgaatctgct ttgtcattgt 120

ggcaccccaa tttgaagttg ctccttgtca ctcttgggga acatggttcc agatactaca 180

ccaagagttt caaaggatcg gtagatgctt tccatgtcaa tacagttgat acaactggtg 240

ccggtgattc ctttgttggt gctttattgg ccaagattg 279

<210> 2650
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2650

gatcaaggtc agtgatgcgg agcttgagtt cctcacagga agtgacaaga ttgatgatga 60

atctgctttg tcattgtggc accccaattt gaagttgctc cttgtcactc ttggggaaca 120

tggttccaga tactacacca agagtttcaa aggatcggta gatgctttcc atgtcaatac 180

agttgataca actggtgccg gtgattcctt tgttggtgct ttattgccaa gattgtcgat 240

gatcagtcca tacttgaaga tgaac 265

<210> 2651
<211> 230
<212> nucleic acid
<213> Glycine max

<400> 2651

tgagcatttg ggagaaggct gatttgatca aggtcagtga tgcggacttg agttcctcac 60

aggaagtgac aagattgatg atgaatctgc tttgtcattg tggcacccca atttgaagtt 120

gctccttgtc actcttgggg aacatggttc cagatactac accaagagtt tcaaaggatc 180

ggtagatgct tgccatgcaa tacagttgat acaactggtg cccggtgatc 230

<210> 2652
<211> 241
<212> nucleic acid
<213> Glycine max

<400> 2652

attattttca ggctagaata ttccattatg gctccatcag cttgattgat gagccatgca 60

agtcagctca ccttgctgct atgagcattg ccaaaaactc tggttgcatt ctatcatatg 120

atccaaattt gagattggct ctatggcctt ctgcagacgc cgctcggaaa ggcataatgg 180

atatatggga tcaagctgat gtcataaaga taagtgagga tgagattaca tttttgactg 240

g 241

<210> 2653
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2653

ctccatcagc ttgattgatg agccatgcaa gtcagctcac cttcctgcta tgagcattgc 60

caaaaacctg gttgcattct atcatatgat ccaaatttga gattggctct atggccttct 120

gcagactccg ctcggaaagg cataatggat atatgggatc aagctgatgt tataaagata 180

agtgaggatg agattacatt tttgactggg ggtgatgatc cttatgatga taatgttgtt 240

ttgaagaaac tttttcaccc aa 262

<210> 2654
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2654

attctcttac ccgtataaac tactattaac ttccaccaga acacgtttct ggtttcttct 60

ggctctgcat ttaccatact ctgtttcttg gtttcaattc aatcacacac ctctttgccc 120

tcatggccca ctttacctcc tcaggtaaat cagacaatct caccatagaa gactgtattg 180

gaaaaagtgc gctggttgtg tgctttggtg aaattttaat agactttgtg ccaacagtgt 240

gtggagtgtc actagctgaa gcacctgctt tca 273

<210> 2655
<211> 272
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (264)
<223>

<400> 2655

caagctgatg ttataaagat aagtgaggat gagattacat ttttgactgg gggtgatgat 60

ccttatgatg ataatgttgt tttgaagaaa ctttttcacc caaatctcaa gcttttaatt 120

gttactgaag gttcacaggg ttgcagatat tacacgaagg catttaaggg cagggttgca 180

ggtgttaaag ttaaacctgt agacacaact ggagctggcg atgcatttgt tagtgggatt 240

ttatactgca tagcttctga ccanactatt tt 272

<210> 2656
<211> 128
<212> nucleic acid
<213> Glycine max

<400> 2656

gtacagataa gtgaggatga gattacattt ttgactgggg gtgatgatcc ttatgatgat 60

aatgttgttt tgaagaaact ttttcaccca aatctcaagc ttttaattgt aactgaaggt 120

tcacaggg 128

<210> 2657
<211> 239
<212> nucleic acid
<213> Glycine max

<400> 2657

ctcttcatta cacaacaaca aagtagttgt taatagcctc tgttttcttc ttgccaccaa 60

aatctcacac cttccattgc atcatcattc ataaatggct catcccacct catcaggtca 120

atcccatgat ctcaaaaaag aagattgcaa ggaaacaaga tcactggttg tttgctttgg 180

ggaaatgtta atagactttg ttccaacggt gggaggagtg tcactggctg aagcacccg 239

<210> 2658
<211> 229
<212> nucleic acid
<213> Glycine max

<400> 2658

tgttgacaat tctggcctgc tctttgatga tcatgcaagg acagcgttgg gattttatgc 60

tcttaagagt aatggagaac ctgaattcat gttttaccga aatccaagtt ctgatgtgct 120

ccttcgtcct gatgaaattg atatggacct cataaagaag gccacaatat ttcattatgg 180

ttcaaagttt gattaaggaa cctgtaggtc agctcatctt gctgcaatg 229

<210> 2659
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2659

ctcttgggga acatggttcc agatactaca ccaagagttt caaaggatcg gtagatgctt 60

tccatgtcaa tacagttgat acaactggtg ccggtgattc ctttgttggt gctttattgg 120

ccaagattgt cgatgatcag tccatacttg aagatgaacc aaggttaaga gaagtactaa 180

tgtttgcaaa tgcatgtgga gctattacaa ctacccaaaa gggagcaatt ccggcccttc 240

ccaaagagga ggctgc 256

<210> 2660
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2660

ctgtcactct tggggaacat ggttccagat actacaccaa gagtttcaaa ggatcggtag 60

atgctttcca tgtcaataca gttgatacaa ctggtgccgg tgactccttt gttggtgctt 120

tattggccaa gattgtcgat gatcagtcca tacttgaaga tgaaccaagg ttaagagaag 180

tactaaagtt tgcaaatgca tgtggagcta ttacaactac ccaaaaggga gcaattccgg 240

cccttcccaa agaggaggct gcactg 266

<210> 2661
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2661

tctcgagccg attcggctga gatggttcca gatactacac caacagtttc aaaggatcgg 60

tagatgcttt ccatgtcaat acagttgata caactggtgc cggtgattcc tttgttggtg 120

ctttattggc caagattgtc gatgatcagt ccatacttga agatgaacca aggttaagag 180

aagtataaag tttgcaaatg catgtggagc tattacaact acccaaaagg gagc 234

<210> 2662
<211> 253
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (39)
<223>

<400> 2662

cgaaaacagt gttccaaaat ccacacacac tctctctcnt catggcgttg aacaatggcg 60

tccccgccac cggcaccggc ctcatcgtca gcttcggtga gatgctcatc gacttcgtcc 120

ccaccgtctc tggcgtgtcc ctggccgagg cccctggctt cctcaaggaa aacggcgttc 180

gcggcgacgg catcaacttt gaccagggcg cacgcaccgc cctggccttc gtgacctaac 240

gcgccgacgg gga 253

<210> 2663
<211> 168
<212> nucleic acid
<213> Glycine max

<400> 2663

ctaaaatcca aacacactct ctcttcccat ggcgttgaac aatggcgtcc ccgccaccgg 60

caccggcctc atcgtcagct tcggtgagat gctcatcgac ttcgtcccca ccgtctctgg 120

cgtgtccctg gccgaggccc ctggcttcct caaggccccc ggcggcgc 168

<210> 2664
<211> 286
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (92),(195),(267),(276)
<223> unsure at all n locations

<400> 2664

aaacagtgtt ccaaaatcca aacacactct ctctccccat ggcgttgaac aatggcgtcc 60

ccgccaccgg caccggcctt catcgtcagc tntcggtgag atgctcatcg acttcgtccc 120

caccgtctct ggcgtgtccc tggccgaggc cctggcttcc tcaaggcccc cggcggcgcc 180

cccgctaacg tcgcnatcgc cgtgtcgcgc ctcggcggca aagcgctttc gtcggcaagc 240

tcggcgacga cgagttcggc aaaatgntcg ccggantccc caagga 286

<210> 2665
<211> 304
<212> nucleic acid
<213> Glycine max

<400> 2665

gttttccatt acggatcaat cagtttgatc gtggagccat gcagatcagc acacttgaag 60

gcaatggaag tagccaagga atctgggtgc ttgctctcct atgaccccaa ccttcgtcta 120

cctttgtggc catcggctga ggaagctcgt aagcaaatac tgagcatttg ggagaaggct 180

gatttgatca aggtcagtga tgcggagctt gagttcctca caggaagtga caagattgat 240

gatgaatctg ctttgtcatt gtggcacccc aatttgaagt tgctccttgt cactcttggg 300

gaac 304

<210> 2666
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2666

gttttccatt acggatcaat cagtttgatc gtggagccat gcagatcagc acacttgaag 60

gcaatggaag tagccaagga atctgggtgc ttgctctcct atgaccccaa ccttcgtcta 120

cctttgtcgc cttcggctga ggaagctcgt aagcaaatac tgagcatttg ggagaaggct 180

gatttgatca aggtcagtga tgcggacttg agttcctcac aggaagtgac aagattgatg 240

atgaatctgc tttgtcattg tggcacccca atttgaagtt 280

<210> 2667
<211> 275

<212> nucleic acid
<213> Glycine max

<400> 2667

caagattcat catcaatctt gtgacaggaa gtgacaagat tcatcatcaa tcttgtcact 60

tcctgtgagg aactcaagct ccgcatcact gaccttgatc aaatcagcct agtgccaaat 120

gctcagtatt tgcttacgag cttgctcagc cgaaggcaca aaggtagacg aaggttgggg 180

tcataggaga gcaagcaccc agattccttg gctacttcca ttgccttcaa gtgtgctgat 240

ctgcatggct ccacgatcaa actgattgat ccgta 275

<210> 2668
<211> 247
<212> nucleic acid
<213> Glycine max

<400> 2668

ggatcaatca gtttgatcgt ggagccatgc agatcagcac acttgaaggc aatggaagta 60

gccaaggaat ctgggtgctt gctctcctat gaccccaacc ttcgtctacc tttgtggcct 120

tcggctgagg aagctcgtaa gcaaatactg agcatttggg agaaggctga tttgatcaag 180

gtcagtgatg cggacttgag ttcctcacag gaagtgacaa gattgatgat gaatctgctt 240

tgtcatt 247

<210> 2669
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2669

ggatcaatca gtttgatcgt ggagccatgc agatcagcac acttgaaggc aatggaagta 60

gccaaggaat ctgggtcttg ctctcctatg accccaacct tcgtctacct ttgttgcctt 120

cggctgagga agctcgtaag caaatactga gcatttggga gaaggctgat ttgatcaagg 180

tcagtgatgc ggagcttgag ttcctcacag gaagtgacaa gattgatgat gaatctgctt 240

tgtca 245

<210> 2670
<211> 253

<212> nucleic acid
<213> Glycine max

<400> 2670

gtgaccctac gcgccgacgg ggagcgtgag ttcatgttct acagaaaccc cagcgccgac 60

atgctcctca agcccgaaga actcaatctc gaactcatca gatctgcaaa agttttccat 120

tacggatcaa tcagtttgat cgtggagcca tgcagatcag cacacttgaa ggcaatggaa 180

gtagccaagg aatctgggtg cttgctctcc tatgacccca accttcgtct acctttgtgg 240

ccttcggctg agg 253

<210> 2671
<211> 234
<212> nucleic acid
<213> Glycine max

<400> 2671

caatctcgaa ctcatcagat ctgcaaaagt tttccattac ggatcaatca gtttgatcgt 60

ggagccatgc agatcagcac acttgaaggc aatggaagta gccaaggaat ctgggtgctt 120

gctctcctat gaccccaacc ttcgtctacc tttgtggcct tcggctgagg aagctcgtaa 180

gcaaatactg agcatttggg agaaggctga tttgatcaag gtcagtgatg cgga 234

<210> 2672
<211> 263
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (237)
<223>

<400> 2672

ctcaatctcg aactcatcag atctgcaaaa gttttccatt acggatcaat cagtttgatc 60

gtggagccat gcagatcagc acacttgaag gcaatggaag tagccaagga atctgggtgc 120

ttgctctcct atgaccccaa ccttcgtcta cccttgtggc cttcggctga ggaagctcgt 180

aagcaaatac tgagcatttg ggagaaggct gatttgatca aggtcagtga tgcgganttg 240

agttcctcac aggaagtgac aag 263

<210> 2673
<211> 229
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (173),(177)
<223> unsure at all n locations

<400> 2673

gctcctcaag cccgaagaac tcaatctcga actcatcaga tctgcaaaag ttttccatta 60

cggatcaatc agtttgatcg tggagccatg cagatcagca cacttgaagg caatggaagt 120

agccaaggaa tctgggtgct tgctctccta tgaccccaac cttcgtctac ctntgtngcc 180

ttcggctgag gaagctcgta agcaaatact gagcatttgg gagaaggct 229

<210> 2674
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2674

ggatcaatca gtttgatcgt ggagccatgc agatcagcac acttgaaggc aatggaagta 60

gccaaggaat ctgggtgctt gctctcctat gaccccaacc ttcgtctacc tttgtgcgcc 120

ttcggctgag gaagctcgta agcaaatact gagcatttgg gagaacgctg atttgatcaa 180

ggtcagtgat gcggacttga gttcctcaca ggaagtgaca agattgatga tgaatctgct 240

ttgtcattgt ggcacc 256

<210> 2675
<211> 323
<212> nucleic acid
<213> Glycine max

<400> 2675

ttcggctcga gaatggcgca cgcaccgccc tggccttcgt gaccctacgc gccgacgggg 60

agcgatagtt catgttctac agaaacccca gcgtcgacat gctcctcaag cccgaagaac 120

tcaatctcga actcatcaga tctgcaaaag ttttcaatta cggatcaatc agtttgatcg 180

tggagccatg cagatcagca cacttgaagg caatggaagt agccaaggaa tctgggtgct 240

tgctctccta tgaccccaac cttcgtctac ctttgtggcc ttcggctgag gaagctcgta 300

agcaaatact gagcatttgg gag 323

<210> 2676
<211> 380
<212> nucleic acid
<213> Glycine max

<400> 2676

aaggctttgg ggagatgatg atcaatttgg tccctacagt agcaagagtg tcccttgcag 60

atgcaactgc ctataagaaa ttcccttctg gagccactgc caatgttgct gttggaattt 120

gtagactaag aggctcagca gctttcattg gcaaggtggg aaatgatgaa tttggacatc 180

tgttatctga tattctgaaa caaaatggtg ttgacaattc tggcctgctc tttgatgatc 240

atgcaaggac agcgttggga atttatgctc ttaagagtaa tggagaacct gaattcatgt 300

tttaccgaaa tccaagttct gatgtgctcc ttcgtcctga tgaaattgat atggacctca 360

taaagaaagc acaatatttc 380

<210> 2677
<211> 336
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (172)
<223>

<400> 2677

gctcccaaca gtgtccaaat ccaacgcaca ctttttcccc catggggttg aacaatggcg 60

tccccgccac tggcaccggc ctcatcgtta gcttcggcga gatgctcatc gacttcgtcc 120

ccaccgtctc cggcgtgtcc ctggccgagg cccctggctt cctcaaggcc cncggcggcg 180

ccccagccaa cgtcgccatc gccgtgtcgc gactcggcgg caaagccgcc ttcgtcggca 240

aactcgggga cgacgagttc ggccacatgc tcgccggaat ccttaaggag aacggtgtcc 300

gcgccgacgg cattaacttc gaccagggtg cacgca 336

<210> 2678

<211> 339
<212> nucleic acid
<213> Glycine max

<400> 2678

gggagcgtga gttcatgttc tacagaaacc ccagcgccga catgctcctc aagcccgaag 60

aactcaatct cgaactcatc agatctgcaa aagttttcca ttacggatca atcagtttga 120

tcgtggagcc atgcagatca gcacacttga aggcaatgga agtagccaag gaatctgggt 180

gcttgctctc ctatgacccc aaccttcgtc tacctttgtg gccttcggct gaggaagctc 240

gtaagcaaat actgagcatt tgggagaaag ctgatttgat caaggtcagt gatgcggaag 300

ctgagttcct cacaggaagt gacaagattg atgatgaat 339

<210> 2679
<211> 271
<212> nucleic acid
<213> Glycine max

<400> 2679

cagccgcaga cagagatgga agctgtgtgt ggaagtgttt gggtcacatc ctctcttcca 60

cgctcaccca agtccactct ctctctattc cgctctactc atcaacacct aacagcattt 120

ccttcacaat cccatctttt cttatatcac cctcctccct atgctaatgc taaaaccctc 180

cgcgccagaa cctcctccaa acccgccatt ttccttcccc acttaattgc ttctctggaa 240

caagttgacc agacttacat aatggtcaag c 271

<210> 2680
<211> 391
<212> nucleic acid
<213> Glycine max

<400> 2680

acgcgtccag tacagctggc caaaaaacga ccgaaggggg agataccaag gaaatttggt 60

tcttacctct tacccgcaga cagatgaaag aagggaaata catggaagct gtgtgtgcaa 120

gtggaagcag tgtttgggtc acatcctcgc ttacacgcac acccaagatc acactccctc 180

tattccgcgc cagttagcac cagctaacag catttccttc acaatccctt cttttctcct 240

atcacccttc tcgctatgct aatgctagaa ccctccgcgc cacaacctcc tccagaccca 300

ttttccttcc ccacataagt gcatcactgg aacaaattta ctacacttat attatggtca 360

agcccgacgg cgtcaaacgt ggcctcgtgg g 391

<210> 2681
<211> 405
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (383)
<223>

<400> 2681

agacggctgc gagaagacga cagaaggggg gttcttctta gccgtagttt tctctcacag 60

ccgcagacag agatggaagc tgtgtgtgga agtgtttggg tcacatcctc tcttccacgc 120

tcacccaagt ccactctctc tctattccgc tctactcatc aacacctaac agcatttcct 180

tcacaatccc atcttttctt atatcaccct cctccctatg ctaatgctaa aaccctccgc 240

gccagaacct cctccaaacc cgccattttc cttccccact taattgcttc tctggaacaa 300

gttgaccaga cttacataat ggtcaagccc gacggcgtgc aacgtggcct cgtgggagaa 360

attacttcta ggtttgagaa ganagggttt aagtcaactg gcttg 405

<210> 2682
<211> 237
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (206),(227)
<223> unsure at all n locations

<400> 2682

gaagcacttt tggatgttgc gtcatgtctt gcaagcagtg ctcagaccca gaagggatgg 60

aatcgcataa tatttgagaa gccatttggc tttgatgcac tttcttccca taggctgaca 120

caatatcttc tttcaaactt tcaggaaaag caaatatata gaattgatca tctactagga 180

aggatatctc atgaaaactc tacagnttta agggtttcaa agcgagnttt tgagcca 237

<210> 2683

<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2683

ctgtgttgag ttttccaacc ttaaaaagac tctctcttct ctctcgctct ttctctccct 60

gaagcaaaac aacattagca tcaaaaccag agtggttcta gtaatccggt gctgctagag 120

gatgggaact agtgaatggc atatcgagcg aagatctagc ttcggcactg aatcccccctt 180

agcaatatag gcacgcaatg tgcctgaaac tcgtcactct ctattgtcgt gcttggcgct 240

tctggggatc ttgct 255

<210> 2684
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2684

tatggaatcg cataatattt gataagccat ttggctttga tgcactttct tcccataggc 60

tgacacaata tcttctttca aactttcagg aaaagcagat atatagaatt gatcatctac 120

taggaaggaa tctcattgaa aatcttacag ttttaaggtt ttcaaatcta gtttttgagc 180

cactttggag tcgtacttat atagataatg tacaggtcat tttatcagag gacttggctg 240

tgcatcctgg aaatattcaa 260

<210> 2685
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2685

tacggctgcg acaagacgac agaaggggag tgcgtgaaga aaacaccaac tgttttgagt 60

tttccaacct taaaaagact ctctcttctc tctctctctt tctctacctg aagcaaaaca 120

acattagcat caaaaccaga gtggttctag taatccggtg ctgctagagg atgcgaacta 180

gtgaatggca tatcgagcga agatctagct tcggcactga atccccctta gcaagagagg 240

caggaaatgt gcctgaaact gggtcactct ctattgttg 279

<210> 2686

<211> 137
<212> nucleic acid
<213> Glycine max

<400> 2686

ccaggcagta tataagacat ggacagttga tattctcaga agattttggc actgaaggac 60

gtggcgggta ctttgaccat tatggtatca tgagagacat tatgcagaat catttacttc 120

aaatactagc actcttt 137

<210> 2687
<211> 284
<212> nucleic acid
<213> Glycine max

<400> 2687

caaccttaaa agactctctt ttctctctct gaactctgaa gcaaaacaac attaccagag 60

tggttctagt aattcagtgc tgctagaaga tggaaactag tgaatggcat atcgagcgaa 120

gatctagctt cggctctgaa tccccctta g caagagaggc aggaaatgtg cctgaaactg 180

ggtcactctc tattgtggtg cttggtgctt ctggtgatct tgctaagaag aagacatttc 240

ctgcactttt ccacctatac ctgcagggat tcttaccacc agat 284

<210> 2688
<211> 242
<212> nucleic acid
<213> Glycine max

<400> 2688

cttttctctc tctgaactct gaagctaaac aacattacca gagtggttct agtaattcag 60

tgctgctaga agatggaaac tagtgaatgg catatcgagc gaagatctag cttcggctct 120

gaatccccct agcaagagag gcaggaaatg tgcctgaaac tgggtcactc tctattgtgg 180

tgcttggtgc ttctggtgat cttgctaaga agaagacatt tcctgcactt ttccacctat 240

ac 242

<210> 2689
<211> 194
<212> nucleic acid
<213> Glycine max

<400>   2689

tgtttcagct aactctgctt cacttggtaa ttgagtggtt ctagtaatcc ggtgctgcta   60

gaggatggga actagtgaat ggcatatcga gcgaagatct agcttcggca ctgaatcccc   120

cttagcaaga tatgcaggaa atgtgcctga aactgggtca ctctctattg ttgtgcttgg   180

cgcttctggg gatc   194

<210>   2690
<211>   286
<212>   nucleic acid
<213>   Glycine max

<220>
<221>   unsure
<222>   (100),(272)
<223>   unsure at all n locations

<400>   2690

cttactcctc ctgcagttga ggcaatatca gagagttttg gagagtggat tatcaaaggt   60

ttaaagaagg aaaaaggata ccctgtagag aatgttagan cgtctctccg ggcgtgaccc   120

tcgagtccac agggtcccaa attgagcgtc gcagttttgc aggtctggct cgcgccggtt   180

gcatggtgta tgatatggga ctagccacca ccccggcttg tttcatgagc atttgttgcc   240

tccattgcct atgatgcttc aatgatgatg anagcttctc acttgc   286

<210>   2691
<211>   269
<212>   nucleic acid
<213>   Glycine max

<220>
<221>   unsure
<222>   (97)
<223>

<400>   2691

gtcttgctcg atcaatgcca acaagcggtg ctctggaccg tgttgctaaa aaattgaacc   60

tccctttctt tgaggtcccc actggttgga aattttntgg gaatcttatg gatgctggga   120

atttgtccgt tgcggggaag agagttttgg aacaggttct gatcacattc gtgagaaaga   180

tggcatctgg gctgtcttag cttggctttc tattattgca catcgcaaca aagacaagaa   240

tcccggggag aaattgatct ccgtatctg 269

<210> 2692
<211> 289
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (40),(54),(70),(99),(106),(112),(127),(166),(202),
(237)...(238),(254)
<223> unsure at all n locations

<400> 2692

cttgctcgat caatgccaac aagtggtgct ttggaccgtn ttgctgaaaa attngacctc 60

cctttctgtn aggcatgctt gatttttctt acaatttcnt tcttcntaaa tnattaatat 120

aaatganata ggcttcacat atttttagac agttctgaaa taacanaaga tggacccggg 180

attcagggcc ccactggttg gnaatttttt gggaatctta tggatgctgg gaatttnncg 240

gtttgcgggg aagnaagttt ggaacaggtt ctgaccacat gcgtgagat 289

<210> 2693
<211> 298
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (2),(20),(39),(51),(101),(141),(151)
<223> unsure at all n locations

<400> 2693

tngtcaacat tctgtatgcn gaaaatggac ctgattttng agcagccagt natggggatg 60

gtgatagaaa tatgatttta ggaagaagtt tcttgtaact nccttcagac tctgtagcag 120

ttattgcagc cattgcaaga naagcgattc natacttcaa gaacggagtt aagggtcttg 180

ctcgatcaat gccaacaagc ggtgctctgg accgtgttgc taaaaaattg aacctccctt 240

tctttgaggt ccccactggt tggaaatttt ttgggaatct tatggatgct gggaattt 298

<210> 2694
<211> 264
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (6),(195),(263)
<223> unsure at all n locations

<400> 2694

tttgtnaggt tttttgtcac tccttcagat tccgtggcca ttatcgctgc aaatgcactt 60

gaagctatac catacttttc tgctggttta aagggtgttg ccaggagcat gccaacctct 120

gctgccctgg atgttgttgc caaattctga atttgaaatt ttttgaggtc cccacgggtt 180

ggaagttctt ggtantttaa tggatgctgg attgttcagt ctgtggtgaa gaaagtttgg 240

gatggttcga ccagttcgtg agna 264

<210> 2695
<211> 250
<212> nucleic acid
<213> Glycine max

<400> 2695

cacattcgtg agacagatgg catctgggct gttttagcta gattttctat tattgcacat 60

cgcaacaaag acaagaatcc cggggagaaa ttgatctccg tatctgacgt tgtgatggag 120

cactgggcac ttatggaagg aatttcttct ctagatatga ctacgaggaa tgtgaatctg 180

aaggtgccaa taagatgata gaatacctac gagatatttt gtctaagagc aagcctggtg 240

atcagtatgg 250

<210> 2696
<211> 340
<212> nucleic acid
<213> Glycine max

<400> 2696

cacacctgcc gccagtcaca tcatccggat acgaaaggcg accggtggca tcctcctcac 60

tgccagccac aaccctggtg gccccgatga ggactttggc atgaagtaca acctcgccaa 120

cggtgccccg gctcccgaga gcgtcaccaa caagatctac gaaacctcca agaccctctc 180

gtcgtacaag atcgccgaac tccccgacat cgacttgagc acaattggca cacaaaagta 240

tggcagcctc gaggttgaga tcgtccactc aacagaggac tacctgaaga tgctcaagga 300

catcttcgac tttgacctca tcaagtcgtt cctcaagcag 340

<210> 2697
<211> 228
<212> nucleic acid
<213> Glycine max

<400> 2697

ctggtgggcc cgacaatgat ttcggcatca agtacaacgt caacaacggt ggtccagctc 60

cagagagtgt gaccgacaag atcttccaac gcaccaagga gatttccgcc tacaaggtcc 120

ttgatgctgg cgagcttgac ctatccaaga ttagtagctc cacctatggt cccatggagg 180

ttgagatcgt cgactcgctc aaggactata ttaccctact caaggaca 228

<210> 2698
<211> 231
<212> nucleic acid
<213> Glycine max

<400> 2698

atttagtaaa agcagttcgc aaggcagctg gaaacataga gaaaccattg gagggtttcc 60

atatagttgt tgatgcaggc aatggagcag gaggcttttt tgcagcaaag gttctggaac 120

ctctgggggc aataacttct gggagtcaat ttttggagcc tgatggcttg tttccaaatc 180

atatcccaaa tcctgaggac aaaacagcaa tgaaagctat aacccaagca g 231

<210> 2699
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2699

atcagatctg ccagatgtgg atatcaccac aacaggtgtt acaagcttta caggccctga 60

aggaccattt gatgttgagg tttttgattc agcaagtgat tatataaaat tgatgaagtc 120

aatttttgat tttgaatcta tcaggaaact gctgtcatct cctaaattca cattctgtta 180

tgatgcacta catggggttg gtggagcata tgcaaagagt atatttgtgg atgagcttgg 240

ggcacaagaa agctctttac tgaac 265

<210> 2700

<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2700

cgagctgatg gatccagggc aacaggtgca tttatactga cagcaagtca caatcctggt 60

ggccctcatg aggattttgg aattaaatat aatatggaaa acggtggacc tgcaccagag 120

ggaattactg acaagatata tgaaaacaca acaacaatta atgagtactt gattgcatca 180

gatctgccag atctggatat caccacaaca ggtgttacaa gctttacagg ccctgaagga 240

ccatttgatg ttgaggtttt tgattc 266

<210> 2701
<211> 282
<212> nucleic acid
<213> Glycine max

<400> 2701

gtttccaaat catatcccaa atcctgagga caaaacagca atgaaagcta taacccaagc 60

agtccttgat aacaaagctg atcttggaat tatctttgat actgatgtgg acagatctgc 120

tgctgtggat ttcactggcc gtgaattcaa caggaatcgt ttaattgcct taatggcagc 180

tattgttctt gaggaacatc ctggaacaac tattgtcaca gacagtgtga cttctgatgg 240

gcttaccacg tttattgaga agacacttgg tggaagacac ca 282

<210> 2702
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2702

cacattttat gcctccactg ggacaacctc aataaggaag atcacataaa aagtaacaca 60

cgttatattt ttattgagaa gcagcaccac aagcattgaa gaaacttatc ttagttctgt 120

gttgtttaat tgtctgtttg atttgagtgg tttccaatta cagggctgtc ttagcttggc 180

tttctattat tgcacatcgc aacaaagaca agaatcccgg ggagaaattg atctccgtat 240

ctgacgttgt gatggagcac tgggcaactt atggaag 277

<210> 2703

<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2703

gcattgggct acttatgggc gccattatta tactcgatat gactatgaaa acgtggatgc 60

aggtgcagca aaggaactga tggcatattt ggtcaagctg cagtcctcac tttcagaagt 120

caatcagatt gttaagggga taaggtcaga tgtttcgaat gttgtccacg gtgatgaatt 180

tgagtacaat gatcctgtgg atggttccat ctcatcacat cagggaatcc gatatttgtt 240

tgaggatgga tcacgattga t 261

<210> 2704
<211> 300
<212> nucleic acid
<213> Glycine max

<400> 2704

tctcgagccg aatcggctcg agtacggctg cgagaagacg tcagaacggg tggacagatc 60

tgctgctgtg gatttcactg gccgtgaatt caacaggaat cgtttaattg ccttaatggc 120

agctattgtt cttgaggaac atcctggaac aactattgtc acagacagtg tgacttctga 180

tgggcttacc acgtttattg agaagaaact tggtggcaga caccatcggt tcaaaagagg 240

ctacaaagat gtgattgatg aagctattcg tttgaattct attggtgagg agtcacattt 300

<210> 2705
<211> 279
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (55),(170)
<223> unsure at all n locations

<400> 2705

ccaaaggaag acttcggagg aggacaccca gaccccaatt tgacatatgc aaaanagttg 60

gttgctcgta tgggattggg caaatccgaa ccccaagaag agcccccaga gtttggtgct 120

gcttctgatg gtgatgcaga tcgcaacatg gttcttggta aaaggttttn tgtcactcct 180

tcagattccg tggccattat cgctgcaaat gctgttgaag ctataccata cttttctgct 240

ggtttaaagg gtgttgccag gagcatgcca acctctgct 279

<210> 2706
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2706

ggagcatatg caaagagtat atttgtggat gagcttgggg cacaagaaag ctctttactg 60

aactgtacac caaaggaaga ctttggagga ggacacccag accccaattt gacatatgca 120

aaagagttgg ttgctcgtat gggattgggc aaatccgaac cacaagatga tcccccagag 180

tttggtgctg cttctgatgg tgatgcagat cgcaacatga tacttggtaa aaggtttttt 240

gtcactcctt cagattccgt ggccattatc 270

<210> 2707
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 2707

gcactacatg gggttggtgg agcatatgca aagagtatat ttgtggatga gcttggggca 60

caagaaagct ctttactgaa ctgtacacca aaggaagact ttggaggagg acacccagac 120

cccaatttga catatgcaaa agagttggtt gctcgtatgg gattgggcaa atccgaacca 180

caagatgatc ccccagagtt tggtgctgct tctgatggtg atgcagatcg caacatgata 240

cttggtaaaa ggtttttgt cactccttca ga 272

<210> 2708
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2708

gcttggagca caagaaagct ctttactgaa ctgtacacca aaggaagact tcggaggagg 60

acacccagac cccaatttga catatgcaaa agagttggtt gctcgtatgg gattgggcaa 120

atccgaaccc caagaagagc ccccagagtt tggtgctgct tctgatggtg atgcagatcg 180

caacatggtt cttggtaaaa ggtttttgt cactccttca gattccgtgg ccattatcgc 240

tgcaaatgct gttgaagcta tac 263

<210> 2709
<211> 269
<212> nucleic acid
<213> Glycine max

<400> 2709

aaaattgatg aagtcaattt ttgattttga atctatcagg aaactgctgt catctcctaa 60

attcacattc tgttatgatg cacctacatg ggttggtgg agcttatgca aagagtattt 120

ttgtggatga gcttggagca caagaaagct ctttactgaa ctgtacacca aaggaagact 180

tctgaggagg atacccagac tccagtttga catatgcaaa agagtttgtt gctcgtatgg 240

gattgggcaa atccggaccc caagaagag 269

<210> 2710
<211> 283
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (4),(12),(18),(37),(109)...(110),(160),(271)
<223> unsure at all n locations

<400> 2710

ggcnagtgat tntataanat tgatgaagtc aattttngat tttgaatcta tcaggaaact 60

gctgtcatct cctaaattcc acattctgtt atgatgcact acatggggnn ggtggagcat 120

atgcaaagag tatttttgtg gatgagctgg agcacaagan agctctttac tgaactgtac 180

accaaaggaa gacttcggag gaggacaccc agaccccaat ttgacatatg caaaagcagt 240

tggttgctcg tatgggattg ggcaaatccg naccccaaga aga 283

<210> 2711
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2711

atgagaagga tccatcaaag attgggagac tttcaaatga agcccttgct cctcttgtgg 60

aagttgcatt gaaactttcg aagatggaag aattcactgg tcgatccgct ccaacagtca 120

ttacatgaac acatacaggt ggaaggtggt tagatcctga agtttctccc agtcatttct 180

tctttgttca gtttcttacg gatggccgaa cactagtgtt ggttgtttgc agcctttgct 240

atgggcactt gagtggaatt tga 263

<210> 2712
<211> 308
<212> nucleic acid
<213> Glycine max

<400> 2712

gagaaggatc catcaaagat tgggagactt tcaaatgaag cccttgctcc tcttgtggaa 60

gttgcattga aactttcgaa gatggaagaa ttcactggtc gatccgctcc aacagtcatt 120

acatgaacac atacaggtgg aaggtggtta gatcctgaag tttctcccag tcatttcttc 180

tttgttcagt ttcttacgga tggccgaaca ctagtgttgg ttgtttgcag cctttgctat 240

gggcatgagt ggatttgatc agttacttat caaaatttga tgtgctgaat aagttgcaac 300

tgccgagt 308

<210> 2713
<211> 285
<212> nucleic acid
<213> Glycine max

<400> 2713

caacaattcg attatacatt gagcaatatg agaaggatcc atcaaagatt gggagacttt 60

caaacgaagc acttgctcct gcttgtggaa gttgcgttga aactttcgaa gatggaagaa 120

ttcactggtc gatccgctcc aacagtcatt aatgaacaca ttcaagtgga aggtggttag 180

atcctgaagc ttctcccagt gcatttcatt tcttctttgt ccagtatctt acggatagcc 240

gaacagtaga tttggttgtt tgcagccttt gctatgggaa attga 285

<210> 2714
<211> 260
<212> nucleic acid
<213> Glycine max

<400> 2714

gccagtcatg gtgctcttca atgtttcacg cgtagagacc actcccttcg atggccagaa 60

gcctgaaccc tctggtctcc gcaacaaggt gaaagtgttc gtgcaacctc attacctcca 120

taactttgtt cagtcaacat tcaatgcatt aactgtggaa aaagttagag gtgcaacgct 180

agttgtatct ggtgatggtc gttatttttc aaaggtagct attcagatta taactaaaat 240

gtcagcagca aatggagtaa 260

<210> 2715
<211> 252
<212> nucleic acid
<213> Glycine max

<400> 2715

cgggtagcca gccagtcatg gtgctcttca atgtttcacg cgtagagacc actcccttcg 60

atggccagaa gcctggaacc tctggtctcc gcaagaaggt gaaagtgttc gtgcaacctc 120

attacctcct aactttgttc agtcaacatt caatgcatta actgtggaaa aagttagagg 180

tgcaacgcta gttgtatctg gtgatggtcg ttatttttca aaggaagcta ttcagattat 240

aactaaaatg tc 252

<210> 2716
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2716

gtttttcttt gttccggtag ccagccagcc agccatggtg ctcttcaatg tttcacgcgt 60

tgagaccacc ccctccgatg cacacaagcc tggaacctct cgtctccgca agaaggtgaa 120

agtattcgtg caacctcctt acctccataa ctttgtccag cccacattca atgccttaac 180

tgtggaaaaa gttagaggtg caacgctagt tgtatctggt gatggccgtt atttctcaaa 240

ggaagc 246

<210> 2717
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2717

tccggatttc gttttgcttt gttcaggtag ccagccagtc atggtgctct tcaatgtttc 60

acgcgtagag tccactccct tcgatggcct gaatcctgga agctctggtc tccgcaagaa 120

ggtgagtagt gttcgtgcaa cctcattacc tccataactt tgttcagtca acattcgttg 180

cattaactgt ggataaagtt cgaggtgctg cgctagttgt atctggtgat ggtcgtgatt 240

attcaaagga tgctattcag at 262

<210> 2718
<211> 295
<212> nucleic acid
<213> Glycine max

<400> 2718

ttttcatcaa ctgctaagct aactgaactc tctctcgttg ttcccttggc ctctcgctct 60

ataaatacac atcgcatcat tctctcactt gcacattgaa atctgaacct tccggatttc 120

gttttgcttt gttcaggtag ccagccagtc atggtgctct tcaatgtttc acgcgtagag 180

accactccct tcgatggcca gaagcctgga acctctggtc tccgcaagaa ggtgaaagtg 240

ttcgtgcaac ctcattacct ccataacttt gttcagtcaa cattcaatgc attaa 295

<210> 2719
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2719

ctgcgagaag acgacagaag gggcacatt gaaatctgaa ccttccggat ttcgttttgc 60

tttgttcagg tagccagcca gtcatggtgc tcttcaatgt ttcacgcgta gagaccactc 120

ccttcgatgg ccagaagcca ggaacctctg tctccgcaag aaggtgaaag tgttcgtgca 180

acctcattac ctccataact ttgttcagtc aacattcaat gcattaactg tggagaaagt 240

tagaggtgca acgctagttg tatct 265

<210> 2720
<211> 268
<212> nucleic acid
<213> Glycine max

<400> 2720

gctaagctaa ctgaactctc tctcgttgtt cccttggcct ctcgctctat aaatacacat 60

cgcatcattc tctcacttgc acattgaaat ctgaaccttc cggatttcgt tttgctttgt 120

tcaggtagcc agccagtcat ggtgctcttc aatgtttcac gcgtagagac cactcccttc 180

gatggccaga agcctggaac ctctggtctc cgcaagaagg tgaaagtgtt cgtgcaacct 240

cattacctcc ataactttgt tcagtcaa 268

<210> 2721
<211> 240
<212> nucleic acid
<213> Glycine max

<400> 2721

acggctgcga gaagacgaca gaagggggca cattgaaatc tgaaccttcc ggatttcgtt 60

ttgctttgtt caggtagcca gccagtcatg gtgctcttca atgtttcacg cgtagagacc 120

actcccttcg atggccagaa gcctggaacc tctggtctcc gcaagaaggt gaaagtgttc 180

gtgcaacctc attacctcca taactttgtt cagtcaacat tcaatgcatt aactgtggaa 240

<210> 2722
<211> 248
<212> nucleic acid
<213> Glycine max

<400> 2722

acggctgcta gaagacgaca gaagggggca cattgaaatc tgaaccttcc ggatttcgtt 60

ttgctttgtt caggtagcca gccagtcatg gtgctcttca atgtttcacg cgtagagacc 120

actcccttcg atggcctgaa gcctggaacc tctggtctcc gctagaaggt gaaagtgttc 180

gtgcaacctc attacctcca taactttgtt cagtcaaggt ttaatgcatt aactgtggaa 240

aaagttag 248

<210> 2723
<211> 244
<212> nucleic acid
<213> Glycine max

<400> 2723

tgctcttcaa tgtttcacgc gtagagactc atgactggct ggctacctga acaaagcaaa 60

acgaaatccg gaaggttcag atttcaatgt gctttgttca ggtagccagc cagtcatggt 120

gctcttcaat gtttcacgcg tagagaccac tcccttcgat ggccagaagc ctggaacctc 180

tggtctcgcg caagaaggtg aaagtgttcg tgccacctca ttacctccat aactttgttc 240

agtc 244

<210> 2724
<211> 280
<212> nucleic acid
<213> Glycine max

<400> 2724

caataaactg ctaagctaac tgaactctcc ctctctcctt cctcgttcct ttcgcctctc 60

actacaaata cacatctcat ctcatccgtc tctcactttt aatttttctc tgcaatctga 120

accttccgga tttcgttttt ctttgttccg gtagccagcc agccagccat ggtgctcttc 180

aatgtttcac gcgttgagac cactcccttc gatggacaga agcctggaac ctctggtctc 240

cgcaagaagg tgaaagtatt cgtgcaacct cattacctcc 280

<210> 2725
<211> 140
<212> nucleic acid
<213> Glycine max

<400> 2725

cagccagcca gccatggtgc tcatcaatgt ttcacgcgtt gagaccactc ccttcgatgg 60

acagaagcct ggaacctctg gtctccgcaa gaaggtgaaa gtattcgtgc aacctcatta 120

cctccataac tttgttcagt 140

<210> 2726
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2726

ctactgctaa gctaactgaa ctctccctct ctccttcctc gttcctttcg cctctcacta 60

caaatacaca tctcatctca tccgtctctc acttttaatt attctctgca atctgaacct 120

tccggatttc gtttctcttt gttccggtag ccagccagcc agccatggtg ctcttcaatg 180

tttcacgcgt tgagaccact cccttcgatg gacagaagcc tggaacctct ggtctccgca 240

agaaggtgtc agtattcgtg caatctcatt acct 274

<210> 2727
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2727

catcaactgc taagctaact gaactctctc tcgttgttcc cttggcctct cgctctataa 60

atacacatcg catcattctc tcacttgcaa attgaaatct ggaacttccg gatttcgttt 120

tgctttgttc aggtagccag ccagtcatgg tgctcttcaa tgtttcacgc gtagagacca 180

ctcccttcga tggccagaag cctggaacct ctggtctccg caagaggtga agtgttc 237

<210> 2728
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 2728

gctggattat gttcagtctg tggtgaagaa agttttggga ctggttctga ccatattcgt 60

gagaaagatg gaatatgggc agttttggca tggctatcta tacttgcata tagaataaag 120

ataaacttga agacaagctt gtcactgttg aagacatagt tcgccagcat tgggctactt 180

atgggcgcca ttattatact cgatatgact atgaaaatgt ggatgcaggt gcagcaaagg 240

aactgatggc atatttggtc aagctgcagt cc 272

<210> 2729
<211> 197
<212> nucleic acid
<213> Glycine max

<400> 2729

gctggattat gttcagtctg tggtgaagaa agttttggga ctggttctga ccatattcgt 60

gagaaagatg gaatctgggc agttttggcc tggctatcta tacttgcata taaaaataaa 120

gataaacttg aagacaagct tgtcactgtt gaagacatag ttcgccagca ttgggctact 180

tatgggcgcc attatta 197

<210> 2730
<211> 237
<212> nucleic acid
<213> Glycine max

<400> 2730

cctcgagccg attcggtcga gtggaagttc tttggtaatt taaacgatgc tggattatga 60

ctcagtctgt ggtgaagaaa cttttgggac tggttctgac catattcgtg agaaagatgg 120

aatctgggca gttttggcct ggctatctat acttgcatat aaaaataaag ataaacttga 180

agacaagctt gtcactgttg aagacatagt tcgccagcat tgggctactt atgggcg 237

<210> 2731
<211> 257
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (50)
<223>

<400> 2731

ggaatctggg cagttttggc ctggctatct atacttgcat ataaaaatan agataaactt 60

gaagacaagc ttgtcactgt tgaagacata gttcgccagc attgggctac ttatgggcgc 120

cattattata ctcgatatga ctatgaaaat gtggatgcag gtgcagcaaa ggaactgatg 180

gcatatttgg tcaagctgca gtcctcactt tcagaagtca atcagattat taaggggata 240

aggtcagatg tttcgaa 257

<210> 2732
<211> 266
<212> nucleic acid
<213> Glycine max

<400> 2732

gtacaatgat cctgtggatg gttccatctc atcatatcag ggaatccgat atttgtttga 60

ggatggatca cgattgattt tccgcctatc tggaactgga tcagaaggtg caacaattcg 120

actatacatt gagcactatg agaaggatcc atcaaagatt gggagacttt caaatgaagc 180

ccttgctcct cttgtggaag ttgcattgaa actttcgaag atggaagaat tcactggtcg 240

atccgctcca acagtcatta catgaa 266

<210> 2733
<211> 243
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (229)
<223>

<400> 2733

gtacaatgat cctgtggatg gttccatctc atcacatcag ggaatccgat atttgtttga 60

ggatggatca cgattgattt tccgcctatc tggaactgga tcagaaggtg caacaattcg 120

attatacatt gagcaatatg agaaggatcc atcaaagatt gggagacttt caaacgaagc 180

acttgctcct cttgtggaag ttgcgttgaa actttcgaag atggaagant tcactggtcg 240

atc 243

<210> 2734
<211> 272
<212> nucleic acid
<213> Glycine max

<400> 2734

tacggctgcg agaagacgac agaaggggga taaggtcaga tgtttcgaat gttgttcacg 60

gtgatgaatt tgagtacaat gatcctgtgg atggttccat ctcatcacat cagggaatcc 120

gatatttgtt tgaggatgga tcacgattga ttttccgcct atctggaact ggatcagaag 180

gtgcaacaat tcgactatac attgagcaat atgagaagga tccatcaaag attgggagac 240

tttcaaatga agcccttgct cctcttgtgg aa 272

<210> 2735
<211> 288
<212> nucleic acid
<213> Glycine max

<400> 2735

ctccgtctta cggcaattga aggaagcact atctctgcaa cttccgtcac attcacatgg 60

cagcttctgc atctgctact gctgtgccat atctagacaa gacagatttt ctaaagcttc 120

aaaatggcag tgacattcgt ggtgtggctg ttgatggtgt tgagggagag ccagttaacc 180

tcactgaacc tgttgccgaa gcaataggag ctgcttttgc tgcatggtta gtggagaaaa 240

agaaagctga tgcttctcag catttgagag tttctattgg tcatgatt 288

<210> 2736
<211> 368
<212> nucleic acid
<213> Glycine max

<400> 2736

atcctggaac aactattgtc acagacagtg tgacttctga tgggcttacc acgtttattg 60

agaagaaact tggtggcaga caccatcggt tcaaaagagg ctacaaaaat gtgattgatg 120

aagctattcg tttgaattct attggtgagg agtcacattt ggcaattgaa actagtggac 180

atggagctct caaggaaaat cattggcttg atgatggcgc atacctaatg gtcaagatct 240

taaataaact tgcttctgca agagcttctg gaaagggtgg tggaagtaag gttttgactg 300

atctaataga cggacttcag gaaccagatt ttgctgtaga actgagatta aagataaacc 360

aaaaccat 368

<210> 2737
<211> 414
<212> nucleic acid
<213> Glycine max

<400> 2737

caagcccatt gatggacaaa agactggaac cagtgggctt cgaaagaagg tgaaagtgtt 60

tatgcaagac aattaccttg caaattggat ccaggctctg tttaattcat tgccaccgga 120

ggactacaag aatggtttgt tggtgttggg aggtgatggt cgatacttta atcaggaagc 180

tgcacagata ataatcaaaa ttgctgctgg aaatggtgtt ggaaaaattc tggttggaaa 240

ggaaggtatt ttgtcaacac cagccgtttc tgctgttata agaaagagaa aggcaaatgg 300

tggatttatt atgagtgcaa gccataatcc tggcggacct gaatatgatt ggggtattaa 360

gtttaattac agcagtggac aacctgcacc agaatccatc actgacaaga ttta 414

<210> 2738

<211> 412
<212> nucleic acid
<213> Glycine max

<400> 2738

gaaccttccg gatttcgttt tgctttgttc aggtagccag ccagtcatgg tgctcttcaa 60

tgtttcacgc gtagagacca ctcccttcga tggccagaag cctggaacct ctggtctccg 120

caagaaggtg aaagtgttcg tgcaacctca ttacctccat aactttgttc agtcaacatt 180

caatgcatta actgtggaaa aagttagagg tgcaacgcta gttgtatctg gtgatggtcg 240

ttatttttca aaggaagcta ttcagattat aactaaaatg tcagcagcaa atggagtaag 300

acgtgtttgg attggtcaaa atggattgct ttcaactcct gcagtatctg ctgttatacg 360

tgaaagagtt ggagctgatg gattcagggc aacaggtgca tttatactga ca 412

<210> 2739
<211> 396
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (279)
<223>

<400> 2739

caataaactg ctaagctaac tgaactctcc ctctctcctt gctcgctcct ttcgcctctc 60

actacaaata cacatctcat ctcatccgtc tctcactttt aatttttctc tgcaatctga 120

accttccgga tttcgttttt ctttgttccg gtagccagcc agccagccat ggtgctcttc 180

aatgtttcac gcgttgagac cactcccttc gatggacaga agcctggaac ctctggtctc 240

cgcaagaagg tgaaagtatt cgtgcaacct cattacctnc ataactttgt tcagtcaaca 300

ttcaatgcat taactgtgga aaaagttaga ggtgcaacgc tagttgtatc tggtgatggt 360

cgttattttt caaaggaagc tattcagatt ataact 396

<210> 2740
<211> 358
<212> nucleic acid
<213> Glycine max

<400> 2740

gcgaattcag ctcgagcaat taactgttaa gctaactgaa ctctccctct gtcctgcctc 60

attcctttgg cctctcacta caaatacaca tctcatctca tccgtctctc acttttaatt 120

tttctctgca atctgaacct tccggatttc gctattcttt gttccggtag ccagtcagcc 180

agccatcgtg ctctacaatg tttcacgcgt tgagaccact cccttcgatg gacagaagcc 240

tggaacctct ggtctcctca cgaacgtgac cgtattcgtg caacctcatt acctccataa 300

cttcgatcag tcaacattca atgcattaac tgtggaaaaa gttagaggtg caacgcta 358

<210> 2741
<211> 251
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (215),(224),(236)
<223> unsure at all n locations

<400> 2741

acagtttgat ggtgagaggt gatgtgtggt ttggggctaa tattactttg aaggggcaag 60

tgactattgc tgcaaaacct ggcttgaaat tggaaattcc tgatggggtg acgattgaga 120

ataaggagat caacgaccct gcagatatct aaggatgaat gttgtcgaat tgctgagatt 180

tggtccagtg atacatgact gctgaacttt gattnccagg caanacattt agttgncccct 240

ttgccccccc c 251

<210> 2742
<211> 256
<212> nucleic acid
<213> Glycine max

<400> 2742

caaagctagg gcaaatcctg aaaacccttc tattgaactt gggccagaat ttaagaaggt 60

tagcaacttc ttgggccgct tcaagtcaat tcccagtatt gttgagcttg acagtctaaa 120

agtggctggc aatgtatggt ttggagatgg tgttatcctc aagggaaaaa tcagtatcgt 180

ggccaatcct ggtgttaagc tggaagttcc cgatggtgct gtcatttcgg ataaggaaat 240

taatggccca gaggac 256

<210> 2743
<211> 264
<212> nucleic acid
<213> Glycine max

<400> 2743

ctggcctttt gttctcgtgt caatttctaa atccaccacc acaccctctc ttctattctc 60

tattattatt atctccacac ccttcactct ccctcagtct tctctcgaat cttccaccgc 120

aatggccacc cctgccgaga aactctccgc tctcaaatcc gccgtcgccg gattgaacga 180

aatcagtgag aatgagaaga acggattcat cagcctcgtc ggccgctatc tcagtggcga 240

acgcagcatg tggaatggag caag 264

<210> 2744
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2744

agtatatcct agtgttgaag tcggacaatg tggcaacagt ccttgatcca aacatactaa 60

atcatttgat gataaatgat attgaatatt gcatggaggt gacaccaagc aattcgttta 120

atttaatgtt acccacaacg aaatttaagc ttcgggagat tggtggagac caagataaac 180

acttgaagga caatttcaaa ctcatcgata caacaaacat gtgggtgagt ttaagagcca 240

tcaagaggtt tgt 253

<210> 2745
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2745

caaatctgca attgatattt gtgatggact gacatatctg gatttgatca ttaaccagat 60

tgagaccctc aattccaagt atggaagcag ggttccattg cttcttttca ataaagatga 120

cattcatgat agttctctaa aggttttgga gaagtattct aaatcaagtg ttgaagtgca 180

cacttttaaa cagggtgaag atcgagagtt gaaatcattg ggtgaatata tagcaaggag 240

gaa 243

<210> 2746
<211> 255
<212> nucleic acid
<213> Glycine max

<400> 2746

tcctccgtcg ctgcattgag ccaaatcagt gagaatgaga agaatggatt cacaagcctc 60

gttgctcgtt acctcagtgg cgaagacagc atgttgagtg gagtaagatc gagacgccta 120

cggatgaagt agtggtgcct tatgactctt tggcaccgac tcctgacggt tctttggagg 180

tgaagaacct cttggacaag cttgtggtgt tgaagctcaa tggaggcttg gggacaacta 240

tgggttgtac tggcc 255

<210> 2747
<211> 260
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (5)...(6)
<223> unsure at all n locations

<400> 2747

ggagnngtat tctaaatcaa gtgttgaagt gcacactttt aaacagggtg aagatcgaga 60

gttgaaatca ttgggtgaat attatagcaa ggaggaagtg catccatttg atgatgttga 120

tgtgttccgt ttactaatga ctggtggaac ccttgattca ttattatcac agggtaagga 180

gtatatccta gtgttgaagt cggacaatgt ggcaacagtc cttgatccaa acatactaaa 240

tcatttgatg ataaatgata 260

<210> 2748
<211> 282
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (116)
<223>

<400> 2748

atgaactcat tcaacactca tgatgacact caaaagattg ttgagaaata taaaaactca 60

aatattgaga ttcatacgtt taaccagagt caatatcctc gtttggttgt tgatgncttt 120

ttgccattcc catccaaggg gcagacaggc agggacgggt ggtaccctcc tggccacgga 180

gacgtcttcc catcattagt gaatagtgga aagcttgatg tgctattatc acagggtaag 240

gagtatgtgt ttgttgccaa ttcagacaac ctggtgctgt ag 282

<210> 2749
<211> 240
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (22),(52),(64),(66),(75),(131),(150),(166),(181),(191),(193),(201),(205),(207),(212),(214)...(215),(220),(225),(233),(239)
<223> unsure at all n locations

<400> 2749

cttccaccgc aatggccacg gngccgagaa actctccgct ctcacatccg cngtcgccgg 60

attnancgaa atcantgaga atgagaagaa cggattcatc agcctcgtcg gccgctatct 120

cagtggcgaa ngcagcatgt ggaatggagn aagatccaga cgctanggac gaatggttgt 180

ncctacgaca ntnggcgcca nctcngnagg tncnnggggn aaatnatgga aanctgtgnt 240

<210> 2750
<211> 275
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (67),(86)...(87),(92)
<223> unsure at all n locations

<400> 2750

aatttctaaa tccaccacca caccctctct tctcttctct tctctccact caacacaacg 60

tcgcctnctt cttctctcga accctnnagc gnaatgacca cccgcaccga gaagctctcc 120

gctctcaaat ccgccgtcgc cggatcgaac gaaatcagtg agagtgagaa gaacccattc 180

atcagcctcg tcagccgcta tctcagtggc gaacgcagca tgtggaatgg agcaagatcc 240

agacgcctac ggacgaagtg gttgtgcctt acgac 275

<210> 2751
<211> 312
<212> nucleic acid
<213> Glycine max

<400> 2751

ttcggctcga cgtcacaggg taaagagtat gtatttcttg ccaattcaga taacttggga 60

gctatagttg acttgatgta cttgactcat tgatgtagag atcttaaatc atttgatcca 120

gaacaagaat gaatactgta tggaggtgac tcccaaaaca ttggctgatg taaagggtgg 180

cactttgatt tcttacgaag gaagggttca gcttttggaa attgcacaag tcccagatga 240

acatgtcaat gagttcaagt caatagagaa gttcaaaatt ttcaacacaa atcatagtcg 300

gtgaacttaa at 312

<210> 2752
<211> 209
<212> nucleic acid
<213> Glycine max

<400> 2752

gctcggaatc ggccgagctc gagccgcgaa gcagcgtgtg gaatggagca agatccagac 60

gcctacggac gaagtggttg tgccttacga gactttggcg ccaactcctg aaggttcttc 120

ggaggtgaag aatctattgg acaagcttgt ggtgttgaag ctaaatggag gcttgggaac 180

aactatgggt tgcactggtc ctaaatctg 209

<210> 2753
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2753

ctccgctctc aaatccgccg tcgccggatt gaacgaaatc agtgagaatg agaagaacgg 60

attcatcagc ctcgtcggcc gctatctcag tggcgaacgc agcatgtgga atggagcaag 120

atccagacgc ctacggacga agtggttgtg ccttacgaca ctttggcgcc aactcctgaa 180

ggttcttcgg aggtgaagaa tctattggac aagcttgtgg tgttgaagct aaatggaggc 240

ttgggaacaa ctatgggttg cactggtcct aaatctg 277

<210> 2754
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2754

ccctcgagcc gaatcggctc gagcggctcg agcgctatct cagtggaccc gcagatgtgg 60

actggagcaa gatccagacg actacggacg acagtggttg tgccttacga cactttggcg 120

ccaactcctg aaggttcttc ggaggtgaag aatctattgg acaagcttgt ggtgttgaag 180

ctaaatggag gcttgggaac aactatgggt tgcactggtc ctaaatctgt aattgaagtt 240

cgtga 245

<210> 2755
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2755

ttccaccgca atggccaccg ctgccgagaa actctccgct ctcaaatccg ccgtcgccgg 60

attgaacgaa atcagtgaga ctgagaagaa cggattcatc agcctcgtcg gccgctatct 120

cagtggcgaa cgcagcatgt ggaatggagc aagatccaga cgcctacgga cgaagtggtt 180

gtgccttacg acactttggc gccaactcct gaaggttctt cggaggtgaa gaatctattg 240

gacaagcttg tggtgttgaa gctaaatgga 270

<210> 2756
<211> 219
<212> nucleic acid
<213> Glycine max

<400> 2756

cgccaccgct gccgagaaac tctccgctct caaatccgcc gtcgccggat tgaacgaaat 60

cagtgagaat gagaagaacg gattcatcag cctcgtcggc cgctatctca gtggcgaacg 120

cagcatgtgg aatggagcaa catccagacg cctacggacg aagtggttgt gccttacgac 180

actttggcgc caactcctga aggttcttcg gaggtgaag 219

<210> 2757
<211> 217
<212> nucleic acid
<213> Glycine max

<400> 2757

accgcaatgg ccaccgctgc cgagaaactc tccgctctca aatccgccgt cgccggattg 60

aacgaaatca gtgagaatga gaagaacgga ttcatcagcc ttgtcggccg ctatctcagt 120

ggcgaacgca gcatgtggaa tggttcaaga tccagacgcc tacggacgaa gtggttgtgc 180

cttacgacac tttggcgcca actcctgaag gttcttc 217

<210> 2758
<211> 286
<212> nucleic acid
<213> Glycine max

<400> 2758

ctggcctttt gttctcgtgt caatttctaa atccaccacc acacactctc ttctattctc 60

tattattatt atctccacac ccttcactct ctctcactct tctctcgaat cttccaccgc 120

aatggccacc gctgccgaga aactctccgc tctcaaatcc gccgtcgccg gattgaacga 180

aatcagtgag aatgagaaga acggattcat cagcctcgtc ggccgctatc tcagtggcga 240

acgcagcatg tggaatggag caagtccaga cgcctacgga cgaatg 286

<210> 2759
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2759

cttcactctc tctcactctt ctctcgaatc ttccaccgca atggccacca ctgccgagaa 60

actctccgct ctcaaatccg ccgtcgccgg attgaacgaa atcagtgaga atgagaagaa 120

cggattcatc agcctcgtcg gccgctatct cagtggcgaa cgcagcatgt ggaatggagc 180

aagatccaga cgcctacgga cgaagtggat gtgcctacac gacactttgg cgccaactcc 240

tgaaggttct tcggaagtga ag 262

<210> 2760

<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2760

ctggcctttt gttctcgtgt caatttctaa atccaccacc acaccctctc ttctattctc 60

tattattatt atgtccacac ccttcactct gtctcactct tctctcgaat cttccaccgc 120

aatggccacc cctgccgaga aactctccgc tctcaaatcc gccgtcgccg gattgaacga 180

aatcagtgag aatgagaaga acggattcat cagcctcgtc ggccgctatc tcagtggcga 240

acgcagcatg tggaatggag caa 263

<210> 2761
<211> 259
<212> nucleic acid
<213> Glycine max

<400> 2761

ctggcctttt gttctcgtgt caatttctaa atccaccacc acaccctctc ttctattctc 60

tattattatt atctccacac ccttcactct ctctcactct tctctcgaat cttccaccgc 120

aatggccacc gatgccgaga aactctccgc tctcaaatcc gccgtcgccg gattgaacga 180

aatcagtgag aatgagaaga acggattcat cagcctcgtc ggccgctatc tcagtggcga 240

acgcagcatg tggaatgga 259

<210> 2762
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2762

cgtgtcaatt tctaaatcca ccaccacacc ctctcttcta ttctctatta ttattatctc 60

cacacccttc actctctctc actcttctct cgaatcttcc accgcaatgg ccaccgctgc 120

cgagaaactc tccgctctca aatccgccgt cgccggattg aacgaaatca gtgagaatga 180

gaagaacgga ttcatcagcc tcgtcggccg ctatctcagt ggcgaacgca gcatgtggaa 240

tgg 243

<210> 2763

<211>	254
<212>	nucleic acid
<213>	Glycine max

<400>	2763

ctggcctttt gttctcgtgt caatttctaa atccaccacc acaccctcac ttctattctc 60

tattattatt atctccacac ccttcactct ctctcactct tctctcgaat cttccaccgc 120

aatggccacc cctgccgaga aactctccgc tctcaaatcc gccgtcgccg gattgaacga 180

aatcagtgag aatgagaaga acggattcat cagcctcgtc ggccgctatc tcagtggcga 240

acgcagcatg tgga 254

<210>	2764
<211>	268
<212>	nucleic acid
<213>	Glycine max

<400>	2764

ctggcctttt gttctcgtgt caatttctaa atccaccacc acaccctctc ttctattctc 60

tattattatt atctccacac ccttcactct ctctcactct tctctcgaat cttccaccgc 120

aatggccacc cctgccgaga aactctccgc tctcaaatcc gccgtcgccg gattgaacga 180

aatcagtgag aatgagaaga acggattcat cagcctcgtc ggccgctatc tcagtggcga 240

aggcagcatg tggactggag caagatcc 268

<210>	2765
<211>	243
<212>	nucleic acid
<213>	Glycine max

<400>	2765

actacactgg ccttttgttc tcgtgtcaat ttctaaatcc accaccacac cctctcttct 60

attctctatt attattatct ccacaccctt cactctctct cactcttctc tcgaatcttc 120

caccgcaatg gccaccgctg ccgagaaact ctccgctctc aaatccgccg tcgccggatt 180

gaacgaaatc agtgagaatg agaagaacgg attcatcagc ctcgtcggcc gctatctcag 240

tgg 243

<210>	2766

<211> 254
<212> nucleic acid
<213> Glycine max

<400> 2766

ctacactggc cttttgttct cgtgtcaatt tctaaatcca ccaccacacc ctctcttcta 60

ttctctatta ttattatctc cacacccttc actctctctc actcttctct cgaatcttcc 120

accgcaatgg ccacctctgc cgagaaactc tccgctctca aatccgccgt cgccggattg 180

aacgaaatca gtgagaatga gaagaacgga ttcatcagcc tcgtcggccg ctatctcagt 240

ggcgaacgca gcat 254

<210> 2767
<211> 235
<212> nucleic acid
<213> Glycine max

<400> 2767

cccttttgtt ctcgtgtcaa tttctaaatc caccaccaca ccctctcttc tattctctat 60

tattattatc tccacaccct tcactctccc tcactcttct ctcgaatctt ccaccgcaat 120

ggccacctct gccgagaaac tctccgctct caaatccgcc gtcgccggat tgaacgaaat 180

cagtgagaat gagaagaacg gattcatcag cctcgtcggc cgctatctca gtggc 235

<210> 2768
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2768

cataacctcg ctctcttcac cctcttcttc ttcttcttct tcttcacttt gtaactttcg 60

aatcttcttc cttccaccgc aatggccact cccacgctta gccccgccga cgccgacaag 120

ctctccaacc tcaaatcctc cgtcgctgca ttgagccaaa tcagtgagaa tgagaagaat 180

ggattcacaa gcctcgttgc tcgttacctc agtggcgaag acagcatgtt gagtggagta 240

agatcgagac gcctacggat ga 262

<210> 2769
<211> 255
<212> nucleic acid

<213> Glycine max

<400> 2769

tcgctctctt caccctcttc ttcttcttct tcttcttcac tttgtaactt tcgaatcttc 60

ttccttccac cgcaatggcc accgccacgc ttagccccgc cgacgccgac aagctctcca 120

acctcaaatc ctccgtcgct gcattgagcc aaatcagtga gaatgagaag aatggattca 180

caagcctcgt tgctcgttac ctcagtggcg aacacagcat gttgagtgga gtaagatcga 240

gacgctacgg atgaa 255

<210> 2770
<211> 245
<212> nucleic acid
<213> Glycine max

<400> 2770

agctctcttc accctcttct tcttcttctt cttcttcact ttgtaacttt cgaatcttct 60

tccttccacc gcaatggcca ccaccacgct tagccccgcc gacgccgaca agctctccaa 120

cctcaaatcc tccgtcgctg cattgagcca aatcagtgag aatgagaaga atggattcac 180

aagcctcgtt gctcgttacc tcagtggcga acacagcatg ttgagtggag gtgctgaagc 240

tcaat 245

<210> 2771
<211> 309
<212> nucleic acid
<213> Glycine max

<400> 2771

ttgaaaatct taaatcattt gatccagaac aagaatgaat actgtatgga ggtgactccc 60

aaaacattgg ctgatgtaaa gggtggcact ttgatttctt acgaaggaag ggttcagctt 120

ttggaaattg cacaagtccc agatgaacat gtcaatgagt tcaagtcaat agagaagtgc 180

aaaattttca acacaaataa tttgtgggtg aacttaaatg cagttaaaag gcttgttgaa 240

gctgatgctc ttaagatgga aattattccc aatccaaagg aagttgatgg aataaaagtt 300

cttcagctg 309

<210> 2772

<211> 297
<212> nucleic acid
<213> Glycine max

<400> 2772

atgcactatt gtcacagggt aaagagtacg tgtttgttgc caattcggat aacttgggag 60

ctatagttga cttgaaaatc ttgaatcatt tgatccagaa caagaatgaa tactgtatgg 120

aggtgactcc caaaacattg gctgatgtaa agggggcac tttgatttct tacgaaggaa 180

gggttcagct cctggaaatt gcacaagtcc cagatgaaca tgtcaatgag ttcaagtcaa 240

tagagaagtt caaaattttc aacacaaata atttgtgggt gaacttaaac gcattaa 297

<210> 2773
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2773

tgtgaaaggt ggcactctga tttcttatga aggaagggtt cagctcctgg aaattgccca 60

agtaccagat gaacatgtca gtgaatttaa gtctatagag aaattcaaaa ttttcaacac 120

aaataatttg tgggtaaact tgaaagcaat taaaaggctt gttgaagctg atgctctgaa 180

gatggaaatt attcccaatc caaaggaagt cgatggagta aaagttcttc aattggaaac 240

tgcagctggt gcagcaataa ggttctttga caaagc 276

<210> 2774
<211> 276
<212> nucleic acid
<213> Glycine max

<400> 2774

ttcggataac ttgggagcta tagttgactt gaaaatcttg aatcatttga tccagaacaa 60

gaatgaatac tgtatggagg tgactcccaa aacattggct gatgtaaagg gtggcacttt 120

gatttcttac gaaggaaggg ttcagctcct ggaaattgca caagtccccg atgaacatgt 180

caatgagttc aagtcaatag agaagttcaa aattttcaac acaaataatt tgtgggtgaa 240

cttaaacgca gttaaaaggc ttgttgaagc tgatgc 276

<210> 2775

<211>	266
<212>	nucleic acid
<213>	Glycine max

<400>	2775

gtggcacttt gatttcttac gaaggaaggg ttcagctcct ggaaattgca caagtccccg 60

atgaacatgt caatgagttc aagtcaatag agaagttcaa aattttcaac acaaataatt 120

tgtgggtgaa cttaaacgca gttaaaaggc ttgttgaagc tgatgctctt aagatggaaa 180

ttattcccaa tccaaaggaa gttgacggaa taaaagttct tcagctggaa actgcagctg 240

gtgctgcaat aaggttcttt gacaag 266

<210>	2776
<211>	251
<212>	nucleic acid
<213>	Glycine max

<400>	2776

gtggcacttt gatttcttac gaaggaaggg ttcagctcct ggaaattgca caagtccccg 60

atgaacatgt caatgagttc aagtcaatag agaagttcaa aattttcaac acaaataatt 120

tgtgggtgaa cttaaacgca gttaaaaggc ttgttgaagc tgatgctctt aagatggaaa 180

ttattcccaa tccaaaggaa gttgacggaa taaaagttct tcagctggaa actgcagctg 240

gtgctgcaat a 251

<210>	2777
<211>	253
<212>	nucleic acid
<213>	Glycine max

<400>	2777

cttttggaaa ttgcacaagt cccagatgaa catgtcaatg agttcaagtc aatagagaag 60

ttcaaaattt tcaacacaaa taatttgtgg gtgaacttaa atgcagttaa aaggcttgtt 120

gaagctgatg ctcttaagat ggaaattatt cccaatccta aggaagttga tggaataaaa 180

gttcttcagc tggaaactgc agctggtgct gcaataaggt tctttgacaa ggctattggg 240

attaatgttc ctc 253

<210>	2778

<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2778

gggtggcact ttgatttctt acgaaggaag ggttcagctc ctggaaattg cacaagtccc 60

cgatgaacat gtcaatgagt tcaagtcaat agagaagttc aaaattttca acacaaataa 120

tttgtgggtg aacttaaacg cagttaaaag gcttgttgaa gctgatgctc ttaagatgga 180

aattattccc aatccaaagg aagttgacgg aataaaagtt cttcagctgg aaactgcagc 240

tggtgctgc 249

<210> 2779
<211> 275
<212> nucleic acid
<213> Glycine max

<400> 2779

acctgcgaga agacgacaga agggcccgat gaacatgtca atgagttcaa gtcaatagag 60

aagttcaaaa ttttcaacac aaataatttg tgggtgaact taaacgcagt taaaaggctt 120

gttgaagctg atgctcttaa gatggaaatt attcccaatc caaaggaagt tgacggaata 180

aaagttcttc agctggaaac tgcagctggt gctgcaataa ggttctttga cagggctatt 240

gggattaatg ttcctcgatc acgattcctt cctgt 275

<210> 2780
<211> 276
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (45)
<223>

<400> 2780

ctttgacaag gctattggga ttaatgttcc tcgatcacga ttccntcctg tgaaggcaac 60

ttcagatttg cttcttgtcc agtctgacct ctacactttg gaagacggat ttgtcattcg 120

gaacaaagct agggaaaatc ctgaaaaccc ttctattgaa ctgggaccag aatttaagaa 180

ggttagcaac ttcttgggcc gcttcaagtc aattcctagt atcgttgagc ttgacagtct 240

aaaagtggct ggtgatgtat ggtttggagc tggtgt 276

<210> 2781
<211> 279
<212> nucleic acid
<213> Glycine max

<400> 2781

ccaatccaaa ggaagttgac ggaataaaag ttcttcagct ggaaactgca gctggtgctg 60

caataaggtt ctttgacaag gctattggga ttaatgttcc tcgatcacga ttccttcctg 120

tgaaggcaac ttcagattgc ttcttgtcca gtctgacctc tacactttgg aagacggatt 180

tgtcattcgg aacaaagcta gggaaaatcc tgaaaaccct tctattgaac tgggaccaga 240

atttaagaag gttagcaact tcttgggccg cttcaagtc 279

<210> 2782
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2782

tacggctgcg agaagacgac agaagggagg gtaaagagta tgtgtttgtt gccaattcgg 60

ataacttggg agctatagtt gacttgaaaa tcttgaatca tttgatccag aacaagaatg 120

aatactgtat ggaggtgact cccaaaacat tggctgatgt aaagggtggc actttgattt 180

cttacgaagg aagggttcag ctcctggaaa ttgcacaagt ccccgatgaa catgtcaatg 240

agttcaagtc aatagagaag ttcaaaattt tca 273

<210> 2783
<211> 277
<212> nucleic acid
<213> Glycine max

<400> 2783

tacggctgcg agaagacgac agaagggagg gtaaagagta tgtgtttgtt gccaattcgg 60

ataacttggg agctatagtt gacttgaaaa tcttgaatca tttgatccag aacaagaatg 120

aatactgtat ggaggtgact cccaaaacat tggctgatgt aaagggtggc actttgattt 180

cttacgaagg aagggttcag ctcctggaaa ttgcataagt ccccgatgaa catgtcaatg 240

agttcaagtc aatagagaag ttcaaaattt tcaacac 277

<210> 2784
<211> 270
<212> nucleic acid
<213> Glycine max

<400> 2784

caggagctga acccttcctt cgtaagaaat caaagtgcca ccctttacat cagccaatga 60

gttcaagtca atagagaagt tcaaaatttt caacacaaat aatttgtggg tgaacttaaa 120

cgcagttaaa aggcttgttg aagctgatgc tcttaagatg gaaattattc ccaatccaaa 180

ggaagttgac ggaataaaag ttcttcagct ggaaactgca gctggtgctg caataaggtt 240

ctttgacaag gctatgggat taatgttcct 270

<210> 2785
<211> 292
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (15)
<223>

<400> 2785

cttaaacgca gttanaaagg cttgttgaag ctgatgctct taagatggaa attattccca 60

atccaaagga agttgacgga ataaaagttc ttcagctgga aactgcagct ggtgctgcaa 120

taaggttctt tgacaaggct attgggatta atgttcctcg atcacgattc cttcctgtga 180

aggcaacttc agatttgctt cttgtccagt ctgacctcta cactttggaa gacggatttg 240

tcatcggaac aaagctaggg aaaatcctga aaaccttcta tgaactggga ca 292

<210> 2786
<211> 191
<212> nucleic acid
<213> Glycine max

<400> 2786

gtaaagggtg gcactttgat ttcttacgaa ggaagggttc agctcctgga aattgcaaag 60

tccccgatga acatgtcaat gagttcaagt caatagagaa gttcaaaatt ttcaacacaa 120

ataatttgtg ggtgaactta aacgcagtta aaaggcttgt tgaagctgat gctcttaaga 180

tggaaattat t 191

<210> 2787
<211> 130
<212> nucleic acid
<213> Glycine max

<400> 2787

attcggataa cttgggagct atagttgact ggaaaatctt gaatcatttg atccagaaca 60

agaatgaata ctgtatggag gtgactccca aaacattggc tgatgtaaag ggtggcactt 120

tgacttctta 130

<210> 2788
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2788

gacggatttg tcattcggaa caaagctagg gaaaatcctg aaaacccttc tattgaactg 60

ggaccagaat ttaagaaggt tagcaacttc ttgagtcgct acatcaccgt tcctagtaac 120

ggacatcatg cttccctaaa agttgctaat catctatagt tctgagcctc gttcatcctc 180

aaggggacca tcatcattgt atcaaaaccc ggtgttaagc tataagttcc cgacggtgtt 240

gccattgtag aca 253

<210> 2789
<211> 236
<212> nucleic acid
<213> Glycine max

<400> 2789

ctttttgcca ttcccatcca aggggcagac aggcagggac gggtgagtac ctcctggcca 60

cggagacgtc ttcccatcat tagtgaatag tggaaagctt gatgtgctat tatcacaggg 120

taaggagtat gtgtttgttg ccaattcaga caacctgggt gctgtagttg acttgaaaat 180

cttaaatcat ttgattgagc acaagaatga atactgtatg gaggtcactc ccaaga 236

<210> 2790
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2790

acaggcacgg acgggtggta ccctcctggc cacggagacg tcttcccatc attagtgaat 60

agtggaaagc ttgatgtgct attatcacag ggtaaggagt atgtgtttgt tgccaattca 120

gacaacctgg gtgctgtagt tgacttgaaa atcttaaatc atttgattga gcacaagaat 180

gaatactgta tggaggtcac tcccaagaca ttggctgacg tgaaaggtgg cactctgatt 240

tcttatgaag gaa 253

<210> 2791
<211> 283
<212> nucleic acid
<213> Glycine max

<400> 2791

cgacaagctt gtggtgttga agctaaatgg aggcttgggc acaactatgg gttgcactgg 60

tcctaaatct gtaattgaag ttcgtgatgg gttgacattt ctagatttaa ttgtgatcca 120

gattgagaat ctcaattcca aatatggaag caatgttcct ttgcttttga tgaattcatt 180

caacactcat gatgacactc aaaagattgt tgaaaaatac caaaactcca atattgagat 240

tcatactttt aaccagagcc agtatcctcg attggttgct gag 283

<210> 2792
<211> 306
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (226)
<223>

<400> 2792

aagctaaatg gaggcttggg cacaactatg ggttgcactg gtcctaaatc tgtaattgaa 60

gttcgtgatg ggttgacatt tctagattta attgtgatcc agattgagaa tctcaattcc 120

aaatatggaa gcaatgttcc tttgcttttg atgaattcat tcaacactca tgatgacact 180

caaaagattg ttgaaaaata ccaaaactcc aatattgaga ttcatncttt taaccagagc 240

cagtatcctc gattggttgc tgagggactt tttgccattg ccttccaaag ggcatactga 300

caagga 306

<210> 2793
<211> 263
<212> nucleic acid
<213> Glycine max

<400> 2793

gacaaggatg gatggtaccc tcctggccat ggagatgtct ttccatcatt attgaacagt 60

ggcaaacttg atgcactatt gtcacagggt aaagagtatg tatttgttgc caattcagat 120

aacttgggag ctatagttga cttgaaaatc ttaaatcatt tgatccagaa caagaatgaa 180

tactgtatgg aggtgactcc caaaacattg gctgatgtaa agggtggcac tttgatttct 240

tacgaaggaa gggttcagct ttt 263

<210> 2794
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2794

cttttaacca gagccagtat cctcgattgg ttgctgagga ctttttgcca ttgccttcca 60

aagggcatac tgacaaggat ggatggtacc ctcctggcca tggagatgtc tttccatcat 120

tattgaacag tggcaaactt atgcactatt gtcacagggt aaagagtatg tatttgttgc 180

caattcagat aacttgggag ctatagttga cttgaaaatc ttaaatcatt gatccagaac 240

aagaatgaat actgtatgga ggtgactccc aaaa 274

<210> 2795
<211> 273
<212> nucleic acid
<213> Glycine max

<400> 2795

acgctgcgag aagacgacag aaggggattt aattgtcatc caaattgaga atcccaattc 60

caaatatgga agcaatgttc ctttgctttt gatgaattca ttcaacactc atgatgacac 120

tcaaaagatt gttgaaaaat accaaaactc aaatattgag attcatactt ttaaccagag 180

ccagtatcct cgattggttg ttgaggactc tttgccattg ccttccaaag ggcatactga 240

caaggatgga tggtaccctc ctggccatgg tga 273

<210> 2796
<211> 254
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (251)
<223>

<400> 2796

aattgaagtt cgtgatgggt tgacatttct agatttaatt gtgatccaga ttgagaatct 60

caattccaaa tatggaagca atgttccttt gcttttgatg aattcattca acactcatga 120

tgacactcaa aagattgttg aaaaatacca aaactccaat attgagattc atacttttaa 180

ccagagccag tatcctcgat tggttgctga ggactttttg ccattgcctt ccaaagggca 240

tactgacaag natg 254

<210> 2797
<211> 274
<212> nucleic acid
<213> Glycine max

<400> 2797

ccaaaactcc aatattgaga ttcatacttt taaccagagc cagtatcctc gattggttgc 60

tgaggacttt ttgccattgc cttccaaagg gcatactgac aaggatggat ggtaccctcc 120

tggccatgga gatgtctttc cacattattg aacagtggca aacttgatgc actattgtca 180

cagggtaaag agtatgtatt tgttgccaat tcagataact tgggagctat agttgacttg 240

aaaatcttaa atcatttgat ccagaacaag aatg 274

<210> 2798
<211> 243
<212> nucleic acid
<213> Glycine max

<400> 2798

ccagattgag aatctcaatt ccaaatatgg aagcaatgtt cctttgcttc tgatgaattc 60

attcaacact catgatgaca ctcaaaagat tgttgaaaaa taccaaaact ccaatattga 120

gattcatact tttaaccaga gccagtatcc tcgattggtt gctgaggact tttgccatt 180

gccttccaaa gggcatactg acaaggatgg atggtaccct cctggccatg gagatgtctt 240

tcc 243

<210> 2799
<211> 253
<212> nucleic acid
<213> Glycine max

<400> 2799

caagggcata ctgacaagga tggatggtac cctcctggcc atggtgatgt cttcccatca 60

ttattgaaca gtggcaaact tgatgcacta ttgtcacagg gtaaagagta tgtgtttgtt 120

gccaattcgg ttaacttggg agctatagtt gacttgaaaa tcttgaatca tttgatccag 180

aacaagaatg aatactgtat ggaggtgact cccaaaacat tggctgatgt aaagggtggc 240

actttgattt ctt 253

<210> 2800
<211> 246
<212> nucleic acid
<213> Glycine max

<400> 2800

caaaagattg ttgaaaaata ccaaaactca aatattgaga ttcatacttt taaccagagc 60

cagtatcctc gattggttgt tgaggacttt ttgccattgc cttccaaagg gcatactgac 120

aaggatggat ggtaccctcc tggccatggt gatgtcttcc catcattatt gaacagtggc 180

aaacttgatg cactattgtc acatggtaaa gagtatgtgt ttgttgccaa ttcggataac 240

ttggga 246

<210> 2801
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2801

cgcatgtacg cgtacgcggc attcggctcg agcaagttgt ggtgttgaag ctaaatggag 60

gcttgggaac aactatgggt tgcactggtc ctaaatctgt aattgaagtt cgtgatgggt 120

tgacatttct agatttaatt gtcatccaaa ttgagaatct caattccaaa tatggaagca 180

atgttccttt gcttttgatg aattcattca acactcatga tgacactcaa aagattgttg 240

aaaaatacca aaactcaaat attga 265

<210> 2802
<211> 261
<212> nucleic acid
<213> Glycine max

<400> 2802

atctagaggt tgacatttct agatttaatt gtgatccaga ttgagaatct caattccaaa 60

tatggaagca atgttccttt gcttttgatg aattcattca acactcatga tgacactcaa 120

aagattgttg aaaaatacca aaactccaat attgagattc atacttttaa ccagagccag 180

tatcctcgat tggttgctga ggactttttg ccattgcctt acaaagggga tactgactcc 240

gatggctggt accctcctgg c 261

<210> 2803
<211> 195
<212> nucleic acid
<213> Glycine max

<400> 2803

gatgaattca ttcaacactc atgatgacac tcaggagatt gttgaaaaat accagaactc 60

aaatattgag attcatactt ttaaccagag ccagtatcct cgattggttg ttgaggactt 120

tttgccattg ccttccaaag ggcatactga caaggatgga tggtaccctc ctggccatgg 180

tgatgtcttc ccatc 195

<210> 2804
<211> 265
<212> nucleic acid
<213> Glycine max

<400> 2804

gttgaagcta aatggaggct tgggcacaac tatgggttgc actggtccta aatctgtaat 60

tgaagttcgt gatgggttga catttctaga ttgaatggtg atccagattg agaatctcaa 120

ttccaaatat ggaagcaagt tcctttgctt ttgatgaatt cattcaacac tcatgatgac 180

actcaaaaga ttgttgaaaa ataccaaaac tccaatattg agattcatac ttttaaccag 240

agccagtatc ctcgattggt tgctg 265

<210> 2805
<211> 262
<212> nucleic acid
<213> Glycine max

<400> 2805

gcaatgtatg gtttggagct ggtgttatcc tcaagggaaa aatcagtatc gtggccaatc 60

ctggtgttaa gctggaagtt cccgatggtg ctgtcatttc ggataaggaa attaatggcc 120

cagaggacct cctgtgagga agcccgctga gtttagaagt atcagactgt atactatctt 180

tatggtctca tgtttttttcc aattattact actcccaagt ttgatgggca aagaaaataa 240

gtccctttttt gtttgtcttc tg 262

<210> 2806
<211> 249
<212> nucleic acid
<213> Glycine max

<400> 2806

gctggtgtta tcctcaaggg aaaaatcagt atcgtggcca atcctggtgt taagctggaa 60

gttcccgatg gtgctgtcat ttcggataag gaaattaatg gcccagagga cctcctgtga 120

ggaagcccgc tgagtttaga agtatcagac tgtatactat ctttatggtc tcatgttttt 180

tccaattatt actactccca agtttgatgg gcaaagaaaa taagtccctt tttgtttgtc 240

ttctgattc 249

<210> 2807
<211> 183
<212> nucleic acid
<213> Glycine max

<400> 2807

cagaatttaa gaaggttagc aatttcttga gccggttcaa gtcaatcccc atattgttga 60

gcttgacagt ctaaaagtgg caggcgatgt atggtttgga gctggtgtaa tccttaaggg 120

aaaagcaagt attcttgcaa aaccgggtgt gaagctggaa atacctgacg gagctgtgat 180

cgc 183

<210> 2808
<211> 184
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (6)...(8)
<223> unsure at all n locations

<400> 2808

aggggnnntt tgattgatat ggaatgctac actcaagcat agctatgaca tcccatgctc 60

cctaacctaa gcatttggct cgagccttcc tttaaaccta agccgttagc ctgaatgggt 120

ggtgaagacc ttttggcaat ggccttccaa aggccttcct gccaaggttg gttggtacct 180

tcct 184

<210> 2809
<211> 389
<212> nucleic acid
<213> Glycine max

<220>
<221> unsure
<222> (340)
<223>

<400> 2809

accacgcgtc cgtttcaaac tcatcgatac aacaaacatg tgggtgagtt taagagccat 60

caagaggttt gttgacactg ttgaagtaag gcagaagaag ccctcatttt caaaggacac 120

agcagctgga ccagcaataa agttctttga taatgtattt ggtgtctccg tgcccgaatc 180

tcgctttctt cccttggatg caacatcaga tctattactt cttcagtcag atctatacac 240

ttgtagagaa ggtgttttaa ctcgaaatcc agctagaact aaccctttaa atcctgtgat 300

agacttggga cctgaatttg aaaagtttgg tgactttcan agtcgcttca gatccattcc 360

aagcatcatt gaggttggac agtttgatg 389

<210> 2810
<211> 411
<212> nucleic acid
<213> Glycine max

<400> 2810

tcgagcttct tcttctctcg aatcttccac cgcaatgacc accgccaccg agaagctctc 60

cgctctcaaa tccgccgtcg ccggattgaa cgaaatcagt gagagtgaga agaacggatt 120

catcagcctc gtcagccgct atctcagtgg cgaagcgcag catgtggaat ggagcaagat 180

ccagacgcct acggacgaag tggttgtgcc ttacgacact ttggcgccaa ctcctgatgg 240

ttcttcggac gtgaagaatc tattggacaa gcttgtggtg ttgaagctaa atggaggctt 300

gggcacaact atgggttgca ctggtcctaa atctgtaatt gaagttcgtg atgggttgac 360

atttctagat ttaattgtga tccagattga gaatctcaat tccaaatatg g 411

<210> 2811
<211> 358
<212> nucleic acid
<213> Glycine max

<400> 2811

ggcactttga tttcttacga aggaagggtt cagcttttgg aaattgcaca agtcccagat 60

gaacatgtca atgagttcaa gtcaatagag aagttcaaaa ttttcaacac aaataatttg 120

tgggtgaact taaatgcagt taaaaggctt gttgaagctg atgctcttaa gatggaaatt 180

attcccaatc caaaggaagt tgatggaata aaagttcttc agctggaaac tgcagctggt 240

gctgcaataa ggttctttga caaggctatt gggattaatg ttcctcgatc acgattcctt 300

cctgtgaagg caacttcaga tttgcttctt gtccagtctg acctctacac tttggaag 358

<210> 2812
<211> 404
<212> nucleic acid
<213> Glycine max

<400> 2812

gattgttgtt atataccaaa actccaatat tgagattcat acttttaacc agagccagta 60

tcctcgattg gttgctgagg actttttgcc attgccttcc aaagggcata ctgacaagga 120

tggatggtac cctcctggcc atggagatgt ctttccatca ttattgaaca gtggcaaact 180

tgatgcacta ttgtcacagg gtaaagagta tgtatttgtt gccaattcag ataacttggg 240

agctatagtt gacttgagta tccttattta agtttcattg gttctttctg tattgtttgt 300

aatgagcttt ggccacatta cttattatta cataaaatca gtgtctttct ttagtgccat 360

cagtgtactt gactcattga tgtagaaatc ttaaatcatt tgat 404

<210> 2813
<211> 372
<212> nucleic acid
<213> Glycine max

<400> 2813

tacggctgcg agaagacgac agaaggggag taaaagttcg tcaattggaa actgcagctg 60

gtgcagcagt aaggttcttt gacaaagcta ttggcattaa tgtgcctcga tctcgcttcc 120

ttcgcgtgaa ggcaacttca gacttgcatc ttgtccagtc ggacctttac actttacaag 180

atggattggt tattaggaac caatctaggg caaatcctga aaatccttcc attgaattgg 240

ggccagaatt taagaatgtt agcaatttct tgagccggtt catgtcaatc cccagtaatg 300

ttgagcttga cagtctaaaa gtggcaggcg atgtatggtt tggagctggt gtaatcctta 360

gaggaaaagc aa 372

<210> 2814
<211> 415
<212> nucleic acid
<213> Glycine max

<400> 2814

agtacggctg cgagaagacg acagaagggg agtaaaagtt cttcaattgg aaactgcagc 60

tggtgcagca gtaaggttct ttgacaaagc tattggcatt aatgtgcctc gatctcgctt 120

ccttcgcgtg aaggcaactt cagacttgca tcttgtcgag tcggaccttt acactttaca 180

agatggattg gttattagga accaatctag ggcaaatcct gaaaatcctt ccattgaatt 240

ggggccagaa tttaagaatg ttagcaattt cttgagccgg ttcaagtcaa tccccagtat 300

tgttgagctt gacagtctaa aagtggcagg cgatgtatgg tttgaacctg gtgtaatcct 360

tacaggacaa gcaagtattc ttgcataacc gggtgtgaag ctggaaatac ctgac 415

1

2